

# The Citrus Industry

THE ONLY PUBLICATION IN THE WORLD  
DEVOTED EXCLUSIVELY TO CITRUS FRUITS

*Issued Monthly*  
*Representative of every interest—*  
*Representing no special interest.*

VOL. 4, NO. 9 TAMPA, FLA., SEPTEMBER, 1923 15C. A COPY

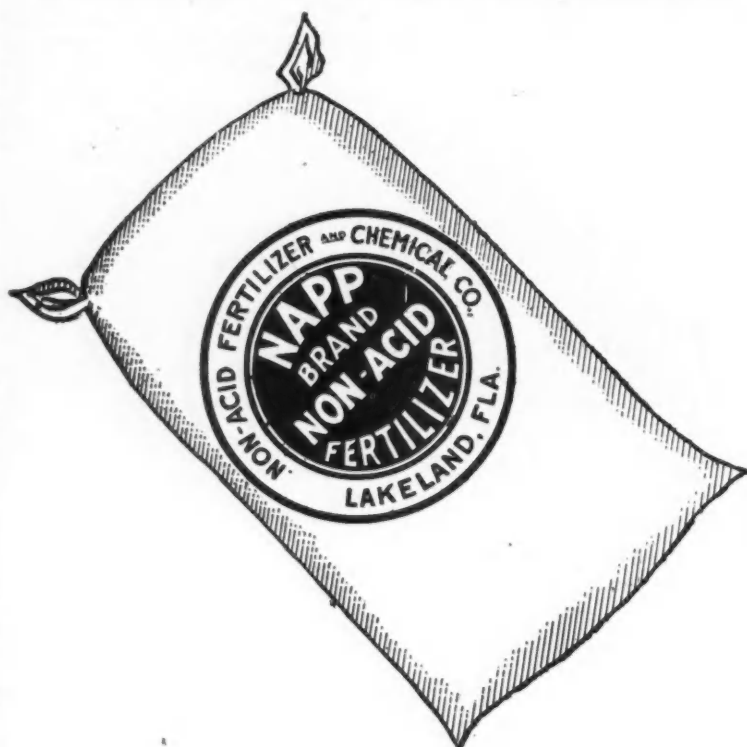


## TWO Trade-Marks And Their Uses

- A trade-mark to identify any product to consumers is of value only as it distinguishes practically unvarying quality.
- Try to imagine Ivory Soap one day white, another day yellowish; one day floating, another not. The result would so confuse users as to lose much of the benefit of the advertising.
- To avoid confusion we use BLUE GOOSE in Florida to distinguish only the best citrus fruits, whether brights, goldens or russets. Other fruit of good eating quality, but not of sufficient appearance, we distinguish by the widely known and advertised AFG trade-mark, indicating "Dependable Quality."
- Thus we have definitely solved an important marketing problem. In doing so we have obtained results which could not be achieved under any single trade-mark, for that which attempts to mean everything ends by having no meaning.

American Fruit Growers Inc.  
Orlando





The  
REAL TEST  
of a  
FERTILIZER  
is the  
RESULTS  
it  
Produces

## "NAPP" BRAND FERTILIZERS Have Produced Results

We have hundreds of testimonial letters from  
Citrus Growers and Truckers testifying to the  
favorable results they have obtained by the use  
of "Napp" Brand Fertilizers.

( Let us assist you with your Fertilizer Problems. )

**Non-Acid Fertilizer & Chemical Co.**

"Manufacturers of Quality Fertilizers with the Acid Left Out"

Lakeland, Florida

## **Business Is Largely Done on Confidence**

—and we know of no business in which the purchaser is more dependent on the knowledge, business policy and honor of the firm he buys of than "THE CITRUS NURSERY BUSINESS."

Over forty-two years' experience in the growing of "Citrus Nursery Stock" has taught us how to grow the very finest citrus stock it is possible to produce and our policy has enabled us to establish ourselves in the confidence of the citrus growers to an extent that is most gratifying and repays us for the many years' exhaustive research and experimental work we have done in the interests of the citrus industry generally.

We place the experience and knowledge acquired over this long period of years at the command of our customers, always having in mind our purchasers' interests.

Bookings to date have been heavier than we anticipated and we urge growers to place their orders now for the coming planting season.

*"GLEN TREES GROW"*

### **Glen Saint Mary Nurseries Company**

**Winter Haven**

**Florida**

**Glen Saint Mary**

OVER FORTY-TWO YEARS OF SATISFIED CUSTOMERS HAS MADE  
THIS THE LARGEST CITRUS NURSERY IN FLORIDA



## Six Thousand

Florida citrus growers regularly ship their fruit through the Florida Citrus Exchange.

This fact alone attests the demonstrated efficiency of co-operative marketing and is convincing evidence of the satisfactory profits it brings producers.

## Profits Derived

from speculation in farm products are paid equally by the producer and the consumer.

Cooperative marketing takes speculation out of fruit selling and assures growers profitable returns, year by year, for their work.

## The Stability

of Florida's citrus industry dates from the time the growers took up cooperative marketing---fourteen years ago.

Upon the continuance of orderly distribution an dexpansion of markets to consume bigger crops depends the future of the industry.

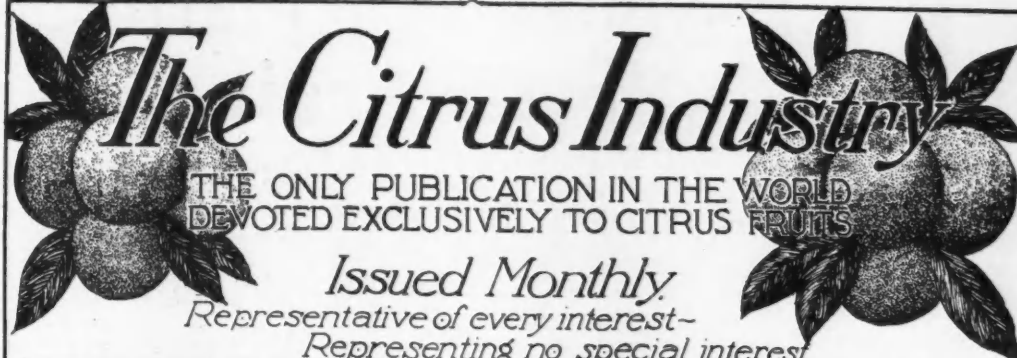
## Grower-Members

of the Florida Citrus Exchange are not looking for the best marketing service.

They have it, through their own selling organization, developed by cooperation to a high degree of efficiency.

**FLORIDA**  
CITRUS EXCHANGE





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## Locating a Citrus Grove

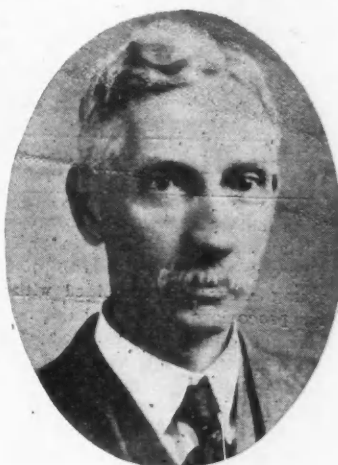
By W. L. Floyd, Professor of Horticulture, College of Agriculture,  
University of Florida, Gainesville, Florida.

Soil, climatic influences and neighborhood conditions vary in different parts of the citrus growing region of Florida. It is advisable therefore that the prospective grower give careful personal investigation to each area in which he may become interested. In order that no important point be overlooked a definite schedule may profitably be followed such as is suggested by the following score card:

### Maximum

1. Character of soil and subsoil	15
2. Water drainage	10
3. Air drainage	10
4. Exposure to wind	5
5. Situation with reference to large body of water	5
6. Facilities for marketing	10
7. Quality of roads	10
8. Distance from insect and disease infested groves	5
9. Ease of clearing	10
10. Price per acre	10
11. Character of community	10
Total	100

1. Quality of the Soil and Subsoil. We are able by the use of different stocks to grow citrus successfully in quite different types of soil, still there are types in which there is little chance of success. Such are those made up largely of coarse sand particles underlaid by a subsoil also of coarse particles, which do not hold water well, but are leachy and dry; and those underlaid with hardpan less than 2½ feet from the surface, which prevents the free movement of capillary water and the deep penetration of roots. It is advisable to dig holes



W. L. FLOYD

three feet or more deep at several points in the area under investigation and determine if there is a fair proportion of humus and finer particles of sand in the surface soil and that the subsoil is of somewhat finer texture. The nearer the color of subsoil approximates an orange-yellow the better it usually is except where darkened by humus.

On pine land the number and size of the pines or remains of them to be found, and the growth of weeds and grass on the surface are indications of its value. If twenty or more large trees are found per acre and the surface is well covered with weeds and grass it is probably good citrus soil.

2. Water Drainage. This is es-

pecially important for flat woods and hammock land. The nearness to a stream or lake into which drains may be cut if the land is not naturally well drained, as much of such land is not, should be carefully investigated. "Citrus trees do not like wet feet" and provision must be made for carrying off the surface and free soil water, especially during the rainy season, if the grower is to secure the full measure of success.

3. Air Drainage. This does not usually receive the attention it deserves because Florida lands are so nearly level. Cold air is heavier than warm. It therefore flows down even a gentle incline and rests in the bottoms and other depressions, when cold spells come therefore trees at top and on sides of slopes are less injured. A location at the bottom of a long slope, or in a depression surrounded by more elevated areas is undesirable.

4. Susceptibility to Wind. In positions near the Gulf and Ocean there is danger of much damage from occasional tropical storms and in all elevated open regions some injury to both fruit and foliage may be caused by heavy winds.

5. Situation With Reference to Large Body of Water. This refers especially to the cold protection secured by the warming of cold north or north-west winds by blowing over large lakes or other bodies of fresh water. The size and depth of the lake are important factors in the increase in temperature, and locations on south

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# Root Stocks in Relation to Better Fruit

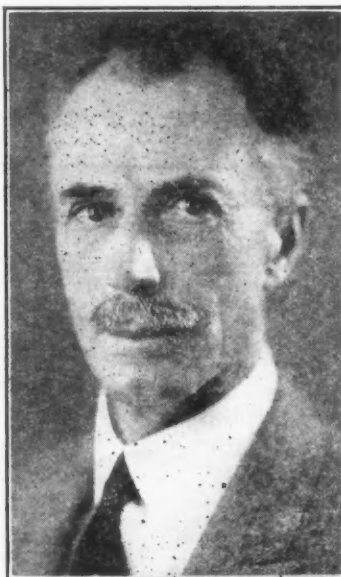
By L. D. Niles, Lucerne Park, Fla.

In the opinion of the writer, the root of the trouble in most cases in relation to better fruit, is in the root stock being unsuited to the soil conditions existing in the individual grove. More and more, quality of fruit will be the determining factor between profit and loss in the citrus grove; therefore the tree must be right, i. e. have a root stock congenial to the soil conditions, else all other expensive manipulations to boost up the quality of fruit will fail.

Many and various root stocks have been used throughout the different citrus sections, and wherever a variety of types of soil is found, it appears necessary to adapt the root stock entirely to local conditions, as regarding soil, drainage and climate. Take for instance Europe, where maldigoma was so disastrous until it was found that sour stock was more resistant to gum diseases of various kinds, and now their commercial groves are almost universally on sour stock.

Speaking of citrus stocks under California conditions, Dr. H. J. Webber, at a meeting during May, 1923, said in part: "Now about stocks. We don't know much of anything about stocks onto which we bud our selected buds. About 90 per cent are budded on sour stock and yet we don't know that it is the best stock. We simply believe that it is the best stock now, because it is used in certain other sections on account of its resistant qualities to certain types of gumming. Ultimately we believe something else will be found better. In the Philippines, for instance, it has been found that mandarin stock is best; we must give more time to the consideration of the right type of stock."

In the case of a grove plainly on the wrong root stock, consideration should be given to the influence which might have decided the stock for this particular property. First kindly bear in mind the factor which might determine the choice between a root stock which under existing conditions would eventually produce the finest quality of fruit, or on the other hand, one noted for producing the quickest growing, most vigorous bud and thereby please the promoter and grove developer; who perhaps expecting to dispose of the property before the



L. D. NILES

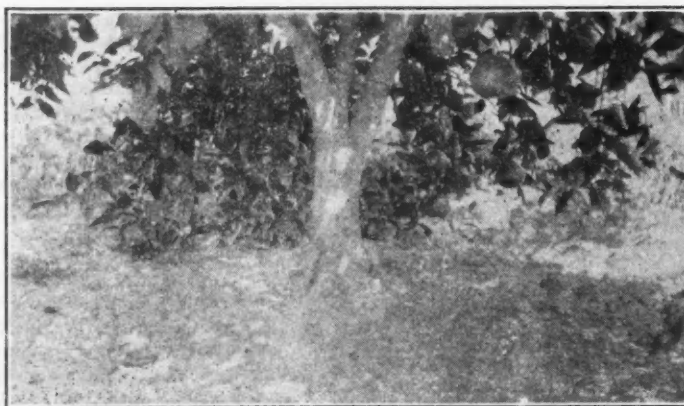
trees mature, it would seem a trait of human nature for some to prefer a vigorous vegetative growth of the young citrus tree combined with early, precocious fruiting habits. The lack of quality of this early fruit could be plausibly explained to the prospective buyer as resulting from the youth of the tree in question.

However to the thoughtful, conscientious growers who are seriously considering this lack of quality, as is

shown by the fruit passing through the various packing houses (and which fails to improve either with the age of the trees or the favorite prescription of changing the brand of fertilizer) an entirely different viewpoint is established from that of the developer looking for quick returns.

Our best citrus authorities have quite generally agreed that certain stocks are best suited to distinct soil and climatic conditions and when positive of such conditions it would appear wise to continue such varieties, at least until something better is found by trial and observation. I venture to assert, however, that there are few growers who realize the number of varieties of stock which could be found in his own immediate section say by carefully checking the groves within ten miles, including his own. What he would find would most likely be a revelation to all concerned. The writer has in mind a hammock grove of a hundred acres, naturally a sour orange location; this property was platted for an individual tree record, including tree variety, condition, performance and also stock variety (which, by the way, was supposed to be on sour). A careful check showed that in addition to sour orange root stock that we also had sweet seedling, two kinds of lemon, grapefruit and trifoliata stock mixed thru this planting.

Even in this ridge section it is surprising what a variety of root stocks are found through some groves, sometimes solid blocks of citrus the root



Temple Orange tree 48 months old with two inarched Cleopatra Mandarin seedlings

stocks of which are wholly unsuited to the existing soil conditions. Generally such groves are two or three removes from the original owners, who as a rule appear wise enough to let go, leaving the problem to other parties, and it does seem tough to de-



Cleopatra Mandarin Seedling grown on high pine land

stroy a tree with perhaps a growth of from eight to fifteen years. Would say in this connection that some very apparent results are being obtained by inarching trees on grapefruit, and sour stocks, with rough lemon seedlings on soil of this class. The advantage being that wood growth is saved and quantity of fruit increased very materially even the second year; which to the man depending on returns from his fruit is better than digging out the old trees as some are doing.

To my mind those having soil and climatic conditions suited to either sour orange (*C. vulgaris*) or trifoliata (*C. trifoliata*) stock do not need to worry about any troubles outlined in this paper, but for the citrus growers not so located, root stock is a matter of most vital importance.

Bittersweet stock has been used only in a small way. It grows wild in hammocks and appears adapted to identical soil requirements as the sour orange. It is quite disease resistant and hardy as to cold; further has the habit of holding its own fruit until

late in the season, therefore under suitable soil conditions should be a logical stock for late oranges. In fact the few instances reported of late oranges on bittersweet stock the quality is said to be unsurpassed and fruit held until late without deterioration.

Sweet orange (*C. aurantium*) is used in California under certain conditions, on high, well-drained soil, as a root stock for oranges, the claim being made of early fruiting habits with young trees. Others report that after eight years there is no appreciable advantage for this stock either in tree growth or quantity of fruit. This stock was formerly extensively planted in Florida, but as a great deal of trouble was encountered with foot-rot, other root stocks showing more resistance to types of gumming, and hardier regarding cold, replaced it.

We are now finding trees on this stock on high pine land which are quite free from gumming and apparently capable of holding their fruit until late in the season; tests are now being conducted with this stock on light, well-drained soils which will be watched with interest by those having the improvement of quality fruit at heart.

Rough lemon (*C. limonum*) stock is without doubt ideal from the nurseryman's viewpoint. A vigorous grower, it being an avaricious feeder, and long season of growth, all combine to make it an ideal stock for their purpose. Regardless of the fact that it is rather tender and therefore liable to damage from cold, and in addition susceptible to scab and types of gumming. Further, their source of seed supply is established, and of sufficient quantity. As several of the larger nurseries plant literally bushels of seed each season, one would naturally expect any agitation for a proposed change in root stock to come from outside sources. While it is admitted

that rough lemon stock in light soil will undoubtedly produce a rapid growth in the bud worked on it, still the fact remains that it is a host to scab and in addition to tenderness regarding cold, has a tendency to coarseness of fruit and texture of rind, perhaps induced somewhat by its inclination to respond to any excuse for a long growing season. Mr. E. N. Reasoner, whose nursery was the first to disseminate rough lemon stock in a commercial way during the '80's, says, "We have learned its shortcomings long ago, i. e. tender nature, host to scab, tendency to grow in winter during warm spells of even short duration, making fruit coarse and short-lived." Quoting from Mr. Evans' paper on citrus root stocks read before the 1922 Florida State Horticultural Society, "I believe that anyone having Florida horticultural interest at heart cannot but feel alarmed at the tremendous planting of rough lemon. The fruit grown on rough lemon is undeniably coarser of skin, has less character, and dries out quicker than fruit grown under same conditions on sour stock. The advocates of rough lemon admit this to be the case while trees are young, but claim the trees overcome it in later years; but this isn't borne out in Lake county." Criticism to be of benefit must be constructive and offer something as an improvement. In the case of rough lemon on light soil we believe there is a stock now being tried out which will prove satisfactory in tree growth and in addition give us first quality fruit on this class of soil. I refer to the Cleopatra mandarin.

Again quoting Mr. Reasoner: "In the Cleopatra mandarin there is hopes of great improvement over the rough lemon for all sandy lands, judging from its past performance. Cleopatra stocks which I had budded with Oneco

(Continued on Page 46)



Temple Orange tree 48 months from bud, inarched with two Cleopatra Mandarin seedlings



# Fertilization in Relation to Better Fruit Production

By C. W. Lyons, Tampa, Fla.

After the grove is set out and comes into bearing the subject of fertilization is the foundation for the kind of fruit that the grower will raise. First let me impress upon the grower that the best is always the cheapest, especially so now that the production of citrus fruits has reached the proportions that the buyer need only consider fruit of first grade. The experience of the writer as a grower is that the more materials used in the manufacture of fertilizer for citrus trees the better results. The more different sources of plant food the better the quality of fruit.

Special mixtures (unless to be used for some particular purpose) are always an experiment for the reason that you are unable to judge the results by one application. The same is true in relation to citrus fertilizers containing only three sources of plant food such as nitrate soda, superphosphate and sulphate of potash. The above three materials will no doubt give some results, but not of the nature to produce better fruit or to promote healthy and strong seasoned growth of the trees. Ammoniate gives the trees growth and where only one element of a quick acting source is used the growth is apt to be too rapid and the twigs flat and woody. Also the fruit itself is liable to obtain a very undesirable size and a very poor texture. Consequently there should be other sources of ammoniates of slower action to allow the trees to digest them as needed. Superphosphate will, of course, be released to function the cell life and it no doubt stimulates root production and it also is concerned in the proper balancing of the flavor of the fruit. This is also true of the phosphoric acid derived from both raw and steamed bone meal. The potash is probably responsible for the production of certain organic acid concerned in the flavor of the fruit and also tends to stiffen and harden the vegetative matter and produces fruit of better carrying quality. It also helps the trees to resist disease and I might add that potash helps the sugar content somewhat.

In the opinion of the writer fertilizer to make better fruit should be derived from the following source: Nitrate soda, sulphate ammonia, steamed and raw bone meal, superphosphate, high grade tobacco, and German sul-



C. W. LYONS

phate of potash. In addition goat and sheep manure and blood and bone have their place in organic mixtures.

Mr. Grower, remember that it takes just as much labor and expense to apply fertilizer manufactured from cheap, low grade materials as it does to apply high grade fertilizer and it is only a question of fooling the trees, which in turn, will fool you, both in quality and dollars.

As to the analysis to be used for the different applications of fertilizers, that will depend upon the condition of the trees at the time the fertilizer is applied. One must take into consideration the amount of cover crop and humus content in the soil. When high grade fertilizers are used there is no good reason why the groves should not have better quality of fruit. Of course, it is expected that the proper program of cultivation and spraying will be carried out to help gain the above results.

Most of the larger fertilizer companies maintain a field service that is very beneficial to the grower in helping to determine the pounds per tree and the analysis of fertilizer to be applied.

The writer has experimented with a great many formulas and has come

to the conclusion that most of the time-tried and tested brands will give better results than special mixtures.

"Quality fertilizers only" should be the slogan of every grower. When one buys soap, shoes or what not, quality always wins and one only has to stop and think a moment of the different commodities on the market today that command a higher price because anything other than quality has been eliminated from the purchaser's mind, and no inducement of the so-called "just as good" will appeal to the purchaser. What is the reason? Quality.

The same is true of fertilizer and just imagine a grower with a grove large enough to produce four or five thousand boxes of fruit applying anything other than quality fertilizer, and I firmly believe that if more growers would concentrate as to the kind of fertilizers to be used and also in getting the groves worked and sprayed at proper intervals that these things in general would, no doubt, help the condition of the grove and help to produce better fruit, and if the same can be accomplished it will surely be a blessing to the trees because they cannot tell you what they need, but from close observation they can show you, and this, of course, would help to more or less give us a standard program by which to be guided rather than the hundreds of different programs that are in force today on as many different groves and all supposed to be right.

In presenting this article the writer does not attempt to cover cultivation and spraying but is confined strictly to the use of fertilizer.

## POLK COUNTY GROVE BRINGS HIGH PRICE

Lake Wales Highlander says: George H. Gibbons has sold his grove at Waverly to J. J. Brooks, of Dothan, Ala., who will make his home there, being tired of the boll weevil country. The price for the 12-acre grove is said to have been \$40,000. The grove is one of the oldest on the Ridge, having been set out by Mr. Gibbons and his father in 1882 or 1883. Some of the biggest trees in Polk are to be seen in this grove which Mr. Gibbons has kept in excellent condition.

# Decay Due to Methods of Handling

By E. F. DeBusk, County Agent, Lake County

It has been said repeatedly that blue mold has caused more loss to the citrus industry than any other disease.

This is a fungus disease, developing from small spores, but is unable to penetrate the rind of a sound or uninjured fruit. Prof. Fawcett says: "It has been found by many experiments that a large part of this decay may be avoided by the careful picking, packing and shipping of fruits." The matter of preventing the great losses due to this disease is, therefore, largely in the hands of those who take our fruit from the trees and deliver it, packed, into the cars. Carelessness in handling the fruit means decay in direct proportion when it reaches the market.

## Picking Equipment

An essential part of a picking equipment is a competent energetic field foreman. He will see that all pickers are equipped with the proper kind of clippers; picking bags; gloves to prevent damage to fruit from finger nails; and that every piece of equipment is kept in good repair as long as it is in use. It is advisable to supply each picker with two pairs of clippers. Every picker should have a number, a duplicate of which should be placed on each field box picked by him. This will enable the foreman to check on the work of each picker, and it will also admit of a check on the foreman by the manager over him. The field foreman should see that picking ladders and field boxes are free from projecting nails and splinters and that same are kept clean and in good repair. He should make regular and systematic inspections of picking and picking equipment.

## Handling the Fruit

A competent field foreman will not tolerate "clipper cuts" and long stems. These are relics of the old days. He knows, or at least he should know, that a clipper cut means at least one decayed fruit; that a long stem will puncture the rind of other fruit, allowing blue mold spores to enter, and may mean a dozen or more decayed fruit upon arriving at the market. He will see that picking bags are carefully emptied into field boxes so as not to bruise the fruit, even if it requires the bending of both back and knees of the picker. Under Florida

picking methods one can often stand in the middle of a ten-acre grove and determine the number of pickers in operation and the location of same by the noise made by pouring the fruit from the picking bags into the field boxes. Some less energetic foremen have actually taken advantage of this method of "keeping tab" on the location of their pickers and the amount of fruit picked.

The Florida orange is very juicy and heavy. Only a short drop will bruise it. A bruised orange is potentially a decayed orange. It is needless to say here that field boxes should not be filled above the level. However this is often done. If fruit is purchased by the field box, fill them "on the level" and thereby keep down decay of bruised and mashed oranges.

I think it can be demonstrated that field supervision of picking can be facilitated and decay materially reduced by paying pickers a day wage and a bonus on all boxes picked over a specified number per day based on the quality of the picking.

The poorest economy in all the operations of handling our fruit is to require one man to handle filled field boxes. This always results in bruised and mashed fruit from boxes not being stacked straight and dropped and pitched about. They are too heavy for one man to handle properly.

In some sections of the citrus belt it is a common thing to see whole picking crews "riding in" on a truck load of fruit, sitting right on the fruit. Needless to say this will mean bruised fruit, resulting in decay, and should never be allowed.

Fruit should not be hauled on springless vehicles over hard roads or rough sand roads. Much damage is often done to fruit by jamming over rough places in the road. All roots and stumps should be cut and holes filled up.

Fruit should never be allowed to stand for a long time in the hot sun, such as is often the case when the owner picks his fruit with the farm hand or family help. After fruit is clipped from the tree it should be rushed to the consumer. Delay means decay in direct proportion from both blue mold and stem-end rot.

Too much stress cannot be placed

on the importance of proper machinery and efficient supervision in the packing house. The house should be kept in a strictly sanitary condition and all machinery should be kept in such repair as to function properly. In some packing houses the soaking tank looks more like a cesspool. The water should be changed often and all trash should be cleaned out of the tank daily. Avoid getting fruit too hot in the drying bin, as this will cause the fruit to sweat, make a more favorable condition for the development of blue mold and make an unsightly pack.

Some packing house foremen have been too careless about the use of gas in pre-coloring fruit, allowing fruit to become too hot, resulting in decay. Gas generators should be far enough away from the coloring room to allow the excess heat to radiate before reaching the room and thereby obviate the danger of overheating.

Fruit should not be allowed to accumulate till bins run over and sizes become mixed, as this often results in an over-bulge pack, crushed fruit in nailing up boxes, and consequently decayed fruit. Much decay results from the bulge pack. Fruit should be packed in the proper pyramid form which gives the desired bulge if care is exercised in selecting and packing the fruit. A competent foreman will not tolerate the use of weak or otherwise defective boxes, and will see that fruit is properly loaded in clean cars.

We must reduce the percentage of decay in our citrus fruits. The practice of eternal vigilance from the tree to the consumer will do it; will give the grower more profits and consequently ward off many a case of blue mold blues.

## CITRUS SUB-EXCHANGE BIG AMOUNT OF BUSINESS

The finance committee submitted its books to be audited recently and it was found that the Polk County Sub-Exchange had transacted an immense amount of business this year, some \$5,180,573 worth of business this season in citrus fruits etc. A total of 2,254,895 boxes of fruit having been shipped during the season, and the largest year's business that has ever been done by the Polk county branch.



# The Duties of a Packing House Foreman

By Bruce Floyd, Orlando, Fla.

Were this subject not confined to the particular phases of a house foreman's duties which relate to the matter of fruit decay, I should have been tempted to follow one of two alternate plans. One would have covered perhaps a hundred pages (and this amount might easily be written on the subject); the other might have been terminated in a sentence, by repeating an old ditty familiar to housewives and which is as follows: "Man's work is from sun to sun, but a woman's work is never done"—the exception in man's case seeming to be that of managing a packing plant. With this statement I might have covered all that could be said on the subject.

It is well in considering a subject to first secure a viewpoint or general diagnosis of the trouble, after which diagnosis the remedies appear to present themselves in more or less orderly rotation.

To gain the right perspective or viewpoint let us first stop to consider the fact that nature has first worked her miracle of producing fruit, which fruit has withstood the winds, rains and sunshine of nine to twelve months before it is entrusted to the hands of men. It is a somewhat unpleasant commentary on mankind to consider that after fruit has withstood the vicissitudes of the elements, the greatest amount of damage is then incurred.

In order to fix the blame, which for the purpose of this article we will place on the shoulders of the packing house foreman, we must first assume that the fruit has been correctly grown, fertilized and delivered to the packing house in such manner that reasonable treatment there will insure its delivery to the consumer not only in sound condition but in a fresh appearing condition. And here I wish to say that from the consumer's viewpoint a shrunken and withered fruit might for the purpose of our argument here be considered a form of decay. Transportation companies have much to account for by reason of slow movement and rough handling and for these conditions the packing house foreman is, of course, not responsible. Still for the purpose of this argument I am here assuming that the transportation company is not at fault.

Considering the matter then solely from the standpoint of the packing house operation and assuming that the other factors over which the foreman has no control have done their parts, we are then in position to view the question from the standpoint of the fruit upon its arrival at the packing house platform.

And right at this packing house platform there is damage done to the extent of thousands of dollars. There is a tendency to heap field boxes with fruit. The average field foreman in having fruit loaded onto the wagon or truck has perhaps cautioned the loaders and has actually seen that all such overfilled boxes were placed on the top of the load or that the surplus fruit has been placed on the top boxes in order that no damage might occur while the fruit is in transit to the packing house. Since the average truck driver is anxious to discharge his fruit promptly and since the top boxes are necessarily removed from his truck first, the very boxes containing the surplus of fruit are not infrequently stacked on the platform and become the bottom rather than the top tier; accordingly the very boxes which were well filled and which we assume were placed on the top of the truck, now find themselves on the bottom with consequent damage. This is an evil which should be intolerable to the owner of fruit or the manager of a packing plant and one which will certainly be corrected when the matter is given consideration.

Assuming now that the fruit is to be artificially precolored, it will next be trucked into the coloring compartment for the purpose of applying gas. There is no necessity at any time for maintaining a temperature in excess of eighty-five to ninety degrees in such coloring rooms. If the coloring room be constructed of canvas the method of maintaining correct temperature is very simple and requires nothing more nor less than the frequent wetting of the canvas. The circulation of air over and around the canvas tent causes tremendous evaporation of this moisture and quickly reduces the temperature on the inside of the room. This is the same principle which has been applied for centuries to earthen water jugs or water bags and the result is too well known to

permit of argument. Where coloring rooms are constructed of wood the problem is not quite so simple but can be overcome by close observance of the temperature and consequent adjustment of the stoves. Thermometers should at all times be kept in coloring rooms and a check kept for the purpose of maintaining permanent records on each individual lot of fruit. Where gas generating rooms are located at some distance from the coloring compartments or tents, the problem of maintaining proper temperatures is greatly simplified, as the heat generated in the gassing room is thereby given an opportunity to radiate and the gas reach the coloring compartments at correct temperatures.

During the early part of last season much fruit came from the coloring rooms showing a dark area, and this was by most foremen attributed to the action of the gas itself. I am positive that such dark spots were simply the result of rough handling and that the action of the gas in discoloring such bruised spots was an actual benefit since it permitted of closer grading and directed the attention of the foreman to a stoppage of whatever condition was causing such bruising. Where fruit is carefully handled and the temperature properly maintained we have not found that the artificial coloring of fruit is detrimental to its carrying qualities. Fruit after such process is really cured and in better condition to pack than fruit not so treated.

The fruit from such coloring tents is now ready for the mechanical handling it will receive at the washer. I have seen fruit poured into hoppers and forcibly pushed by the box dumper in order to expedite its journey into the soaking tank or sprinkler and have oftentimes found myself wishing that these box dumpers had a crate of eggs (preferably matured ones) just in order to see how much damage their rough practices would occasion. Where fruit travels under a sprinkler there is fresh water continually pouring upon it and consequently there is little chance for an unsanitary condition to exist. Where fruit is conveyed or dumped into a soaking tank there is a chance for a very unsanitary condition to exist and this is more fre-

quently than otherwise the case. Leaves, dirt and juice from any decayed or mouldy oranges can soon bring about a filthy condition and one which is liable to infect with blue mould every box of fruit which travels through such a soaking tank. Please understand that I am not opposed to the principle of the soaking tank as I recognize the fact that such tanks can perform better work from the standpoint of cleaning than the sprinkling system, but the soaking tanks should have a constant stream of fresh water pouring into them and should have an exhaust pipe discharging water from the top in order that blue mould (which floats to the surface) may be as quickly as possible removed from the tank. Various prophylactics may be used, and some of these are no doubt very beneficial. However, the usual remedy, bluestone, has a tendency to rust all metal portions of the machinery with which it comes in contact and this method is therefore unpopular with the average house foreman. In any event and whether or not such prophylactics be used, soaking tanks should be emptied at least once daily and thoroughly cleaned. A housewife would hardly use the same dishwater after breakfast, lunch and dinner; yet in some packing houses the same water is perhaps used for the better, or, rather, worse, part of a week.

The fruit has now reached the washer brushes, and here there is very little damage done, provided the brushes are in a good state of repair. The packing house machinery now in general use if correctly installed does very little harm to fruit. Wherever drops occur, this defective installation should be remedied or the point below should be substantially padded in order that there may be no resulting damage to the oil cells.

Assuming that the fruit has a more or less uneventful passage through the washer and into the drier, it is here met with a blast of air which is used for the purpose of drying. In many plants warm air is used, and this practice is not unwise, since it tends to better dry the fruit, although actual heat should be avoided. It is possible to warm air sufficiently to expand it to the point that it will readily absorb moisture without actually heating it to a high temperature. Where air is so warmed it undoubtedly dries fruit better than cold air. Where air is heated to a high temperature there are two resulting damages; first, by overheating and actually parching the oil cells of the fruit; second, where fruit is so heated it quickly becomes moist again upon

striking the cooler air. This the packing house foreman generally terms "sweating," and it will continue not only while the fruit is in the bins but actually after the fruit is packed, moistening the paper in which the fruit is wrapped and bringing about the very condition which the warm air is intended to prevent: namely, moist fruit. I really believe that this latter condition is worse than one brought about through ineffective drying by cold air.

In practically every modern house, fruit is discharged from the dryer into polishers, and here, I think, the most beneficial, yet most often neglected process, occurs. Above everything else, we in Florida suffer from shrinkage, which is nothing more nor less than evaporation. The very fact that Florida fruit is the highest in juice content carries with it the curse of shrinkage and perishability to an extent not suffered by California and other territories where the juice content is lower and the rag or pith correspondingly higher. Accordingly anything that can be done to retard this evaporation and consequently deliver the fruit in fresh-appearing condition, is of the most vital importance. For this purpose there are some patented remedies on the market and I presume that all of them are good. In our own operations, however, we use paraffine or slab-wax. If correctly applied by pressure to the under side of polisher brushes the result is a wax coating on the rind of the fruit, improving its appearance and closing the pores to the point that evaporation is practically stopped. A noted general once named three requisites for the successful prosecution of warfare, in the form of an epigram: "First, money; second, money; third, money." Similarly I say that, for the successful delivery of sound fruit, three of the important factors are: "First, paraffine; second, paraffine; third, paraffine."

The next process is that of grading. Here again we frequently see rough handling. Where grading belts are narrow and the fruit is congested, the graders are really not to blame for whatever damage they may do. Grading belts generally should be wider and operated at a very slow rate of speed. Such a grading belt will convey just as much fruit and will give grading operators opportunity to inspect and assort fruit in a proper manner. Grading belts should be designed in such manner that graders can easily place, and not be forced to throw, fruit onto conveyor belts, which in turn deliver this fruit to the proper sizer. Incidentally the division boards, separating various grades on

the conveyor belt and on the grading belt, should be oval and absolutely smooth. At points where graders usually stand, it has been found helpful to remove a section of the framework on which grading and conveyor belts operate, provided these are of canvas, in order that belts may be springy and thus do comparatively little damage even though the graders do forget that fruit is highly perishable and occasionally play baseball with it.

We have now reached the sizers, which in themselves will cause no damage if properly handled, and which as a matter of fact do not cause a great deal of damage anyway. A bad practice here, however, is the allowing of fruit to bank up in any particular bin, thereby causing such fruit to roll by into the next bin of larger or smaller fruit. Unless the packer is experienced and has trained himself to recognize such fruit as being wrongly sized, such fruit will, when packed, either prove too large or too small as the case may be and the box when packed will, on one hand show too high a bulge resulting in damage, or will be slack and unattractive in appearance.

The actual packing of fruit is another matter, and a book might be written on the subject. Because of the very fact that Florida fruit is high in juice content and consequently shrinks somewhat, we will perhaps always have to adhere to the present bulge pack. Florida fruit if packed flatly would, due to its shrinkage, arrive in the markets in a most unattractive manner. The present practice of bulge packing when not carried to an extreme is not harmful. Bulge packing should be done by "pyramiding" and where this practice is followed practically no decay results. The pyramid pack is accomplished by working toward the center the slightly larger fruit. Correspondingly the slightly smaller fruit are placed in the ends of the boxes, with the result that no undue pressure is exerted anywhere. I think this style of packing is now the rule rather than the exception, however, it is well to consider the other style of packing which, unfortunately, is still in effect in some packing plants. Pyramid packing is the selecting by size variation fruit in such manner that there will be caused a natural bulge. Any other manner of bulge packing means simply that the nailer in putting on the lids resorts to the powerful leverage exerted by his foot on the pedal of the box press for bringing these lids down to

# The Citrus Industry

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By

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## GROVE CALENDAR FOR SEPTEMBER

### Timely Suggestions for Grove Work During the Present Month.

Give last fertilization and cultivation to young non-bearing groves and nursery stock.

Spray citrus trees with an oil emulsion for white fly and purple scale.

Spray or dust pecan foliage with lead arsenate for care bearers.

Cut the cover crop of cowpeas or beggarweed by the 15th to avoid an infestation of pumpkin bugs later.

## BETTER FRUIT

The need of producing a better quality of citrus fruit, rather than the production of an enormous quantity of inferior fruit, has been slowly but surely forcing itself to the fore in the calculations of Florida growers. Florida has demonstrated its ability to produce citrus fruits in quantities which a few years ago would have been deemed impossible—and to market this tremendous production with some degree of satisfaction to the grower.

But this tremendous production has served to emphasize the necessity for improving the quality as well. The wide range of price existing between the better and the inferior grades of fruit has become more and more apparent as the size of the crop has increased from year to year. Always the producer of inferior fruit has been the loser. The public taste has been educated up to the point where only quality fruit will satisfy, and with the enormous crops of the past few years flooding the consuming markets, the buyer has had ample opportunity for the selection of the grade of fruit which pleased him. The result has been that while fruit of the better quality has

found a ready sale at a profitable price, the inferior fruit has been a drag on the market and a source of loss to the producer and shipper.

From its very inception, The Citrus Industry has stood for the production of better fruit, the kind which the consuming public demands and which Florida has demonstrated can be produced if proper attention to cultural methods is given. The Citrus Industry is more thoroughly convinced of the soundness of this principle now than ever before.

It is, therefore, with considerable satisfaction that The Citrus Industry presents this month its "Better Fruit" number, a number in which not only the importance of producing better fruit, but the methods by which better fruit may be produced, is stressed in papers of exceptional merit by men of the highest standing and prominence in the industry in the state.

We believe that a careful study of these papers and the application of the principles laid down by these writers, with due regard to local conditions and the peculiar needs of each grower's own grove, will do much toward bringing about the result which every well wisher of the industry must honestly desire—the production of fruit of better quality, fruit which will stand the ultimate test of popularity in the consuming markets of the land, and which will bring the grower the better price which is the goal of all his thought and labor.

## ACHIEVE THE IMPOSSIBLE

Discussing the citrus fruit situation in Florida, the Produce News says: "Florida growers and shippers are just beginning to awaken to the fact that what would have been regarded as an impossibility was achieved during the last citrus marketing season, with but few persons being the wiser at the time."

In this estimate of the situation the Produce News is absolutely right.

Authentic figures just issued show that during the last shipping season total shipments of oranges and grapefruit from Florida amounted to 16,886,000 boxes. To have marketed successfully this amount of fruit would have been regarded as an absolute impossibility, had there been any anticipation at the beginning of the season that the actual crop was so large. The more popular estimates at the beginning of the season were right around 15,000,000 boxes, and only one estimate had the hardihood to exceed those figures. His estimate was 15,500,000 boxes, or one and one-quarter million boxes short of the actual figures as shown by shipments.

In the preceding shipping season Florida sent forward 13,300,000 boxes of oranges and grapefruit. Thus last season's shipments exceeded those of the previous season by a little more than two and one-half million boxes. The actual production was somewhat larger, as it was variously estimated that from 250,000 to 350,000 boxes of otherwise merchantable fruit were left on the trees this last season and never shipped. This was due to various causes. In part it was undoubtedly due to the high freight rates making shipment of lower grade fruit unprofitable; but partly it was due also to a number of growers



holding their crops too long on bad marketing advice. The fruit thus held finally came into competition with cheap strawberries and deciduous fruits in the northern markets and brought such low prices that shipments were discontinued and the fruit was left on the trees.

Estimates for next year's combined crop of oranges and grapefruit, as might be expected, vary considerably. They range all the way from eighteen million to a twenty-million box total. The opinion of some of the most careful observers is somewhere midway between these figures.

Most of the large shipping organizations carefully accumulate their own figures as to prospective crops for their own information, but do not make them public.

Robert Taylor, citrus agent of the Atlantic Coast Line railroad with headquarters at Orlando, is generally conceded to be the most accurate authority in connection with such estimates. Invariably he has been closer to the actual citrus crops in his predictions than has anyone else. It was he who last season predicted 15,500,000 boxes. He missed the actual shipments by one and one-quarter million boxes last season, but at that he was one-half million boxes nearer than was even the Federal Bureau of Crop Estimates. Mr. Taylor is just now receiving reports from the various sections of the state and compiling them. He has not as yet authorized his figures of estimate, but is understood to be inclined to the belief that shipments may run to somewhere between nineteen and twenty million boxes.

Be that as it may, there is no doubt that the quality of the coming season's crop will be considerably better than was that of last season. Growing conditions have been much more favorable. There was no extended drought like last year and more normal weather conditions, together with vastly increased activity in dusting and spraying for citrus pests, seems to assure perhaps the best quality of oranges and grapefruit in the history of the Florida industry.

The larger shipping organizations are facing the coming season with considerable confidence. Prices paid to the growers by speculative buyers thus far have not been quite so good as those paid at the same time last year, but it has been notable that only a relatively small amount of fruit has thus been contracted for. Up to this time the growers are holding tight to their crops and refusing to let go at any considerable discount below last season's prices.

#### BEAUTIFYING THE HIGHWAYS

The Citrus Industry is in full sympathy and accord with the plans, discussions and purposes of those loyal and public spirited Floridians who are advocating the beautification of the state's splendid highways. It believes fully that every highway should be beautified. To this end, The Citrus Industry hopes that the day may soon come when every roadway in the state may be lined with trees or palms, flowering shrubs or bushes which will set forth in suitable manner the possibilities of Florida in the production of tropical and semi-tropical verdure. No better advertisement of Florida, we believe, could possibly be undertaken, nor with better results.

The Citrus Industry is not, however, among those who believe that citrus trees should be used in such a scheme of highway beautification. We desire to see Florida producing every possible box of citrus fruit of quality, but we cannot agree with those who favor the planting of orange or grapefruit trees along the highways, either as a source of beauty or as a source of revenue.

True, the citrus tree, properly fertilized, properly sprayed and dusted, properly pruned and cared for, is a thing of beauty than which there is none greater. But where in all nature can be found a thing more pathetic, more scraggly, more forlorn than a citrus tree unfertilized, unsprayed and uncared for? Every tree of this nature, whether growing along roadside or in grove is a perpetual menace to every healthy citrus tree in its vicinity. It harbors every known citrus disease and is the host to every known citrus pest. It endangers every healthy tree within many rods of it, and is a perpetual source of worry to every grove owner and the nightmare of every inspector in the employ of the State Plant Board.

With the highways planted to citrus trees, whose business would be to see that the trees were properly fertilized, sprayed, pruned and cared for? Certainly this could not be left in the hands of the county road gangs, untrained and unskilled in the care of citrus trees. The State Plant Board has more duties now than present funds will adequately provide for. It would obviously be unfair to still further tax the board with the care of the hundreds of thousands of trees which such proposed plantings would call for. And, after all, it has been conclusively proven that only the owner of a citrus tree may be counted upon to see that it is given the care which its nature requires. With the public as the owner of highway citrus plantings, the public could not be counted upon to see that this care is given.

By all means, let us beautify our highways. Let us plant trees and palms, shrubs and bushes—but let us in all conscience keep our citrus plantings on the plane where they belong, in the realm of commercial enterprise where scientific care, under trained and skilled men, will make of them things of both beauty and profit and not an eyesore and a menace to other plantings.

Nature has been kind to Florida growers this season in providing weather suitable to the production of better fruit. Growers, too, have aided nature by diligence in the matters of cultivation, fertilization, spraying and dusting. The net result is the prospect of a much better quality of fruit than has been customary in the past.

Of course, we all hope that no disastrous freeze may ever again visit Florida citrus groves. But, while hoping for the best, the wise grove owner will prepare for the worst by providing his grove with adequate heater protection.

Most of the young nursery stock in Florida nurseries is in excellent condition for the winter plantings. Very little serious disease or other grove pests have been noted by the inspectors.

Keep the unripe fruit off the market. It will mean more money in your pocket in the long run.

# Citrus Stem End Rot

By O. F. Burger, Plant Pathologist, Florida Agricultural Experiment Station

Much dissatisfaction has been expressed by the citrus fruit growers on account of the small returns they have received for their fruit. The grower is certain that "they," meaning the marketing agency and the railroads, are robbing him.

Let us analyze, if possible, some of the marketing problems and see "What is the matter?"

One thing which may mean the difference between profit and loss should be mentioned here, and that thing is decay in transit. When one speaks of decay in fruit, immediately some one suggests that the weather has been too wet, too dry, too cold or too hot. He may even make a plea that the fruit is naturally weak. All of these conditions may have been present, but there is a common decay for which the grower is responsible.

Decay is brought about by the presence of parasites, either fungi or bacteria. The parasites enter the fruit and break down the cells and reduce it to a watery mass. They cannot enter a healthy or unbroken rind. An opening must be made, either artificially or by nature, before these organisms can enter the fruit and cause decay.

The most destructive of these parasites is the fungus known as *Phomopsis citri* Faw. This fungus causes both melanose and stem-end rot. Its hiding place is the dead wood of the tree. In the spring of the year the spores ooze out on the surface of the dead twigs and are washed down onto the young fruit, leaves and twigs, where they cause melanose.

*Phomopsis citri* causes melanose on only the young tender tissues. The disease is the result of this fungus attacking the young tissues of the tree. After a leaf is from three to four weeks old it is able to resist the attacks of the fungus. It has been learned from recent spraying experiments of the Florida Experiment Station that the fruit becomes immune late in May or early in June. During the summer—after the fruit becomes immune—this fungus affects only the summer flush of growth and the June bloom; the early crop is immune until fall.

Therefore, if the spring crop has been sprayed and protected by bordeaux-oil, melanose need not be feared after the summer rains begin.

In fall and winter, when the fruit begins to mature, the spores of this same fungus cause stem-end rot. This



O. F. BURGER

rot does not exist in a grove where there is no melanose. In groves where melanose has been severe, stem-end rot may be expected.

The fact that sometimes there is little and sometimes much stem-end rot in a grove could not be explained for a long time. It is known that when a citrus fruit reaches a certain stage of maturity a special tissue is formed at the base of the button that separates the fruit from the stem. When this tissue is formed, small cracks occur underneath the button, by which means the fungus gains entrance into the fruit and thus causes stem-end rot.

It has been proven that this fungus cannot penetrate a healthy rind. Therefore, it is evident that an opening, either artificial or natural, must be made before the fungus can cause the trouble.

If fruit is allowed to hang on the trees so late that this separating tissue, known as the abscission layer, is formed, the grower can expect considerable stem-end rot, particularly if melanose is in his groves. If the fruit is allowed to hang on the trees so late that when one grasps it and gives it a gentle twist, the button pulls out and remains hanging on the tree, the fruit has reached the degree of maturity when stem-end rot can attack it. On the other hand, if the fruit is

picked while the button still remains firm in the fruit, even if treated as described above, there is little danger from stem-end rot in transit.

One year the fruit in a seedling grove was picked in January and much stem-end rot developed in transit. The next year the fruit was picked in December and the loss was slight. The fruit picked in January had the abscission layer formed while the fruit picked in December had not reached that stage of maturity.

Observations in several groves showed that when stem-end rot was present, the separating (abscission) layer was mature. In other groves badly affected with melanose but no stem-end rot, the separating layer was not yet fully developed. The point is that the stage of maturity of the fruit determines the amount of stem-end infection.

If the rains are frequent, the spores of the fungus are washed down onto the fruit, and if the fruit has reached the right stage of maturity, stem-end rot sets in. On the other hand, if there are no rains and the spores remain in the twigs, stem-end rot will not show up.

Looking over the market reports, it was noticed that the percentage of stem-end rot varied from month to month. This variation was due to the time of ripening of the different varieties, the stage of maturity of those varieties when shipped and weather conditions.

## Control of Stem-end Rot

It is believed that, if all trees are thoroughly pruned of dead wood, if a bordeaux-oil spray is correctly applied to control melanose and the fruit is picked before the separating (abscission) layer is formed, stem-end rot in transit will be controlled.

## LARGE ACREAGE BEING

### CLEARED AT GRAND ISLAND

Dillard & Keene Co., growers and packers of citrus fruits, with large packing house in Tavares, have purchased a tractor which is being employed in clearing a 120-acre tract of land near Grand Island, preparatory to planting to orange and grapefruit.

Sixty acres of the tract will be set to Valencias and the remaining section to Marsh seedless grapefruit. The ground will be in condition to plant the citrus trees the latter part of November and during the early weeks of December.



# Decay in Transit from the Growers' Standpoint

By A. B. Michael, Vice President American Fruit Growers Inc. Wabasso, Fla.

There are so many things which contribute to the decay of citrus fruits while in transit, that I have found in attempting to prepare a paper upon this subject from a grower's viewpoint, it has been necessary to include my experiences as a packer and shipper in order that the information I am endeavoring to convey will be as practical and valuable as possible. In doing this I have had no desire to encroach upon any phase of the subject other than from a grower's standpoint. Every grower is or should be interested in all phases of the operation until the fruit reaches the ultimate consumer.

It is my opinion that the chief responsibility for decay rests with the grower. It should be the grower's duty, and desire, to produce fruit that will stand the ordinary handling in a packing house and the ordinary course of travel to the markets without decay. There is no doubt that this can be done in practically every instance, if the grower applies himself closely to a study of his peculiar conditions and remedying weaknesses in the fruit as they are found. It is possible by carefully regulating fertilization, cultivation, and in some instances drainage, to control to a large extent the thickness of the skin, while producing fruit of good texture and avoiding coarseness. This has an important bearing upon decay. The same things materially affect the cellular structure of the fruit itself; and really it is strictly up to the grower as to whether he will produce fruit of good carrying quality, or that which we know as weak fruit. It is possible for very careful and discriminating handling in the packing house to overcome the disadvantage even of inherently weak fruit, as will be pointed out later, but it is undesirable that our packing houses should be loaded up with much fruit of this character. Even if it is possible by careful handling to put it in the markets in good condition the costs of such handling add considerably to the expense of getting the fruit to market and all such expenses ultimately must be borne by the growers. Therefore, it would seem to be proper for each and every grower to accept the responsibility for producing strong, sound fruit which can be laid down in the markets

at a minimum expense. To do so undoubtedly would be to each grower's profit.

In discussing decay and its causes intelligently it will be found that the first thing to be considered is the soil. The soil has a great deal to do with citrus fruits so far as the keeping and carrying qualities are concerned. Fruit grown on wet soil, or what we term our flatwoods lands, will generally show much more decay in transit than that grown on rolling or well-drained lands. Oftentimes a grower does not understand why his fruit shows so much decay upon arrival in market while other fruit packed and handled under the same conditions arrives in sound condition. He has failed to observe that the soil contributes to the carrying quality of the fruit by developing a stronger tissue, larger per cent of saccharine matter in one instance and a weak fruit with low content in the other. In our own groves and those under my supervision planted upon good citrus lands and properly fertilized, we have had practically no decay.

Decay in transit of fruit from groves which produce what we call weak fruit can be greatly reduced by proper fertilization. This means feeding the trees just the proper proportions of plant food to produce a skin that is just thick enough and a cellular structure inside that is strong enough. Generally speaking this means a nicety of balance in the rations of ammonia and potash. I would like to be able to go into each of the various phases of the situation which tend to produce weak fruit and give the results of my experiences in remedying those conditions; but to do so clearly would require exceeding considerably the time allotted to me. However, I am willing to say it is my belief that in almost every case the grower can, if he desires, avoid producing weak fruit. He may find it somewhat difficult to obtain general information which fits the peculiar case of his own grove; but if he cares to get around and look about he undoubtedly can locate some progressive grower who has had precisely the same conditions to contend with and who has successfully met them. By following in the successful grower's footsteps he can eliminate the causes of weakness in his

own fruit. What we need, generally speaking, is a more careful and detailed study of our own groves. There are some growers who are successfully producing good strong fruit on practically every type of soil, with every variety and every root stock that we know. They are the men who have carefully studied their individual situations. By giving our own groves the same careful study and by benefiting through the experiences of these successful men we can produce fruit of good carrying quality almost anywhere upon the peninsula and under almost every condition. In my humble opinion, the one most important thing the growers should know is the contributing character of the soil to the production of fruit with carrying quality and, when found lacking, supply same as nearly as possible by proper fertilization, drainage and cultivation. If, however, we recognize the fact that fruit from many groves is inherently weak much can be accomplished by never picking and packing such fruit during damp, foggy weather. In handling fruit of this character, our rule is that it be picked on clear days with a dry atmosphere and be given right of way through the packing house in order to get it under ice quickly; and with the most careful handling in each operation. In handling fourteen hundred cars from the Indian River section this past season we had reported to us an average of less than one per cent of decay.

Decay of weak fruit in transit is largely attributable to rough, careless handling. Particular pains should always be taken at every stage of the picking, hauling, packing and loading in the car, to avoid bruising the fruit. Speaking as a grower and packer, I consider it poor policy to have fruit picked by the box. Our pickers are always employed by the day and under close supervision. The old saying, "a burned child is afraid of fire," applied in this connection in my own experience.

A few years ago our company took over a packing house in the Indian River section located in a community where the practice was to pick by the box. The same parties being in charge, this practice was continued.

# Our Newest Marketing Problem

By F. L. Skelly, Manager, American Fruit Growers Inc. Orlando, Fla.

(Paper at opening of Farmers' and Fruit Growers' Week at State University, Gainesville, August 6, 1923).

Along about the time when Florida's production of citrus fruits began to approach the mark of two millions of boxes the growers first became concerned in the possibility of overproduction. Events since have shown that the alarm then felt was not justified. Many times since there has been discussion of the possibility of Florida producing an excess of oranges and grapefruit beyond that which was necessary to supply the consuming demand. Up to this time, however, actual overproduction has not become a fact.

Yet right now with the largest citrus crop in Florida's history daily coming nearer and nearer an accomplishment, and with reports from California also indicating the possibility of that state coming in with the biggest crop in its history there is a very natural interest on the part of many growers and shippers in what the immediate future may hold for the successful disposition of the large total volume of oranges and grapefruit which we will shortly have. This interest is only natural, and is justified. Still it seems fairly safe to predict that we shall not then have reached any actual overproduction.

Within the last year there was sold for consumption a total amount of grapefruit which on a causal estimate provided four grapefruit for each man, woman and child in the continental United States. Now four grapefruit is not many for an individual to consume within a period of twelve months. It is certainly not an excessive amount, even if increased by fifty per cent, provided we can educate the public more largely to its delights and its beneficial qualities.

If we take the total volume of oranges sold in the United States last year we find upon the same basis of rough estimate that the public consumed an average of forty-three oranges for each man, woman and child in the continental United States during the twelve months. That is a large consumption of oranges. Yet who can doubt that this power of consumption can be further stimulated to absorb a large additional volume of oranges

within the ensuing few years. It is also well to bear in mind that we not only have a constantly increasing population in our growing country and in Canada; but that the economic growth of North America has been, and is, such as to create a scale of living not known in other countries. Our population is not only being educated to consume as necessities many things which in other countries are regarded as sheer luxuries, but it has the money with which to buy these things.

Oranges first, and now grapefruit, have come to take their fixed place in the diet of the people of the United States and of Canada. There is no doubt, either, that they are playing an important part in preserving the health of many thousands of persons whose ordinary winter diets, without the addition of these health-giving fruits, would not be conducive to a general state of good health. Some sections of our country already are exceedingly well aware of the value of oranges in the diet. The health department of New York City is authority for the statement that that market consumes a considerably larger volume of oranges each year than it does of apples.

What we need to do is to educate other sections of the country to a point where they will consume oranges in a volume proportionate to New York City's consumption. We need to educate the entire country further with regard to grapefruit. Both of these things can and will be done. Good advertising can accomplish much in this direction.

Before we can advertise in many sections, however, it is necessary for us to establish distribution in them. This brings us immediately to the proposition of freight rates on our citrus fruits. No thinking shipper at present doubts that we are going to require a more sympathetic attitude on the part of the carriers who transport our fruits to market. The time has come when we are now justified in asking for, and in obtaining, a readjustment of our freight rates which will materially widen our markets, and which will enable us to maintain a breadth of distribution even during those periods when competitive offerings of citrus fruits from outside Florida are at their greatest volume. No

one justly can dispute the fact that we should be able to lay our citrus fruits down in Seattle just as cheaply as citrus fruits from the Pacific coast may be laid down in Maine. There is no valid reason why we should not be able to deliver our oranges and grapefruit in Denver just as cheaply as citrus fruits from the far West are delivered in St. Louis, the distances to be covered being very nearly equal. If there are any material differences in the costs of effecting transportation over these various routes, they have not yet been established, or not made clear to the growers and shippers of Florida.

All of us fully appreciate the fact that the interests of the growers and shippers and the interests of the transportation lines to a large extent are mutual. As shippers we want to see the carriers prosperous and in a position to render the highest sort of transportation service. We need them and realize it fully. They also must realize that they need us. A big part of our job is going to be to educate them to see that it is to their interest just as much as ours, that we be in a position to distribute our products over the widest possible area. We have got to show them that a basis of freight rates which permits us to be swept back and confined practically to the Atlantic Seaboard at times in our distribution is not only a tremendous handicap and most unfair to us but that actually it is an undesirable thing for them.

We are just beginning to emerge from an era of high costs of doing business, included in which have been a high level of transportation charges. We are not yet at the end of that period of reconstruction. During this time of high costs it is true that many businesses have prospered; some of them have prospered very largely. Yet it is undeniably true that the farmers and those whose livelihood comes from the productiveness of the soil have not prospered as a general thing. Not only have the agricultural and horticultural interests of the country not been generally prosperous, but in many lines have suffered just in proportion that some other lines of business have felt prosperity. Such a situation cannot endure. No person

# A Floridian's Impression of Australian Citrus Industry

By E. N. Reasoner, Oneco, Fla.

To a Floridian the growing of oranges in California and most of Australia seems to be a triumph of man over nature. The fact is that the orange is an exceptionally hardy tree to be able to stand the droughts and heat of their summers, when nature gave it rains and humidity at that season in its native land, South China and Northeast India. Oranges so produced are frequently good fruit but not the luscious and juicy article which we grow in Florida to such perfection; and grapefruit—well, they simply cannot produce that without a proper climate, as acknowledged by our visiting California horticulturists last winter, and the enormous sale of our canned grapefruit in California.

The writer in company with a life-long friend, a nurseryman and orchardist in Illinois, Mr. Guy A. Bryant, spent a part of April and May last in New South Wales and Queensland, Australia, and were greatly interested in the way these fruits are grown. We found that very few groves are irrigated, most of them depending on the natural rainfall, which is moderate to light, and at times very deficient, as during this past season, when considerable loss has been sustained from the terrible drought.

In the groves about Sydney for miles to the West and North they have a very shallow soil, only a few inches deep, underlaid with hard clay or rock and are using rough lemon stock almost to the exclusion of everything else. They simply cannot grow sweet or sour orange stocks there and have not apparently experimented very much in the other possible kinds except mandarins. There is quite a considerable acreage of sour oranges grown on rough lemon roots for fruit to work up into marmalade, and a very few grapefruit, also used for the same purpose and not eaten for breakfast as we do. The grapefruit is small, thick skinned and acid, so answers very well for marmalade. Lemons are also grown considerably and are on rough lemon roots as well, and the fruit is almost the same as grown in Sicily and South California in size and character, in fact lemons are grown even down as far south as Melbourne and over at Auckland, New Zealand, as the cold is not too severe and they do not require heat to

sweeten up as does the orange, which is practically not grown at all in those sections. The use of rough lemon stock evidently causes their oranges to be thicker skinned and inferior generally, as it does under ordinary conditions in our own state.

Owing to shallow soil and lack of rainfall we found their citrus and apple orchards to be very short-lived, practically none over fifteen years and few over twelve years of total age, yet producing heavily enough to be worth planting out for that to us trifling time! One of the oldest and best nurserymen drove us for miles among the groves West and Northwest of Sydney and showed us several nurseries devoted mainly to citrus trees. They are there growing some Emperor mandarin seedlings and budding those to the mandarins and find the fruit superior to that from rough lemon stock, but they do not have the

Cleopatra mandarin at all in Australia at any point according to the several State Fruit Experts with whom we had most interesting talks. Their varieties of mandarins being propagated are numerous, but the best seem to be similar to ours and I did not find any worth importing, in fact several sorts are the very kinds we sent them years ago.

Among their earliest oranges we found the Foster, which my brother selected and named from the late Col. Foster's place in Manatee some 33 years ago; but did not find any Parson Brown. In midseason oranges the Joppa, Maltese Blood, Mediterranean, Patterson, Parramatta and various navels including Washington Navel are largely grown. The navels are all fickle bearers. Lue Gim Gong has been introduced but so far not extensively planted, but the Hart's Tardiff,

(Continued on Page 36)



E. N. REASONER

And little granddaughter, an "Orange Juice Baby."



# Fruit Quarantine May Save Agriculture

By Rex McDill

(One of the most important factors in the production of better fruit is the control of insect pests and diseases. The whole problem is predicated upon keeping out the foreign pests which are dangerous legions surrounding us on every side. The Florida State Plant Board and the Federal Horticultural Board are worthy of commendation and support and are administered by men who know the business and who work with untiring energy to prevent these pernicious foreign invaders from devastating our groves and farms.)

(The recent ruling of the Federal Horticultural Board issued September 1st, quarantines all shipments of fruit and vegetables without special permit except from Canada.) This ruling will have considerable effect on our West Indian neighbors, especially Cuba and the principal citrus growing territory of Cuba which is the Isle of Pines.

(The issuance of this order by the Federal Horticultural Board was apparently without any reason being given at the time but was for good and sufficient cause.) Cuba is thoroughly infested with the black fly and the Sanidad Vegetal, which is the Cuban Horticultural Board, is unable to cope with the situation.

For a few examples: A grower in Cebollas ordered some trees from a nursery in Havana and especially specified that the nursery stock be free from black fly. A government inspector inspected this shipment and tagged it as being free from black fly. On arrival at Cebollas the trees were found to be infested with black fly eggs, larvae and adult black flies. The shipment, of course, was immediately destroyed by the grower but no redress was obtained.

Another example: A shipment of seed potatoes was denied entry into the port of New York from England because of its being infested with potato wart, a very serious disease which has caused a great deal of damage in many European potato-growing countries. The shipment was re-shipped to Cuba. The American authorities notified the Sanidad Vegetal that the shipment was en route to Havana. At that time there was a young American inspector employed by the Sanidad Vegetal who, being acquainted with the ruling of the United

States Horticultural Board, thoroughly insisted that a decree be issued prohibiting the admittance of all potatoes from countries infested with the potato wart. In due time the shipment arrived from New York and was confiscated by the Cuban government. To this extent the actions of the Sanidad Vegetal were good and proper but the confiscated potatoes were sent to an experimental farm and planted; consequently Cuba had a very serious outbreak of the disease. The United States Horticultural Board finding this condition, promptly quarantined all potatoes from Cuba. There are a great many new potato growers in Guines and this quarantine worked a very serious hardship among the growers. Consequently an appropriation for fighting the disease was made by the Cuban government but the only apparent result seemed to be the employment of more incompetents who were not acquainted with the situation or who knew the least thing about potato diseases.

The black fly is a very serious pest and is said to have originated in a nursery in Havana about eight years ago. It is believed that this pest

came from China as the Chinese owner of the garden had made a great many importations from his native land. In three years about six hundred shipments of host plants of the black fly were made to various points in Cuba. In the immediate vicinity of Havana there are innumerable black fly infestations. Within 20 miles of Havana there is a grove which has made quite a number of shipments to the states of grapefruit. It is thoroughly infested. This grove is some five hundred acres in extent and is said to contain about thirty thousand trees. A four per cent kerosene emulsion is being used with little effect as the eggs and larvae of this pest are of a very tough texture and especially difficult to exterminate. The grove looked as if it had been seared by fire and the damage is so great that it may prove more profitable to abandon it altogether than to attempt to fight the pest.

Guavas, of which there are thousands of acres wild in Cuba, and which grow along the wayside in innumerable quantities, are host plants for the black fly, and in addition there are hundreds of other host plants growing in Cuba which makes the extermination of the pest practically an impossibility.

In the eastern part of Cuba where the black fly has been disseminated by shipments from Havana, there are a great many jungles of almost impenetrable density, and black fly has been found in these locations, which shows that it is impossible to eradicate the pest from Cuba. Some measures have been taken in eastern Cuba, the fungus control similar to that used on the white fly in Florida, and these measures are meeting with some success but will never mean the complete eradication of the pest.

The Isle of Pines, on the other hand, is entirely free from black fly. The horticultural development of the Isle of Pines is wholly in the hands of Americans who are exercising true Anglo-Saxon forethought in preventing the entrance to the little Isle of the black fly.

At Batabano the Cuban government has placed an inspector who inspects all shipments to the Isle of Pines from Cuba. This inspector, a conscientious young Cuban, has come through all



The pineapple peddler of Bairoa.

the vicissitudes incumbent upon the position.

The Isle of Pines grows good grapefruit and the trees are very productive, consequently a good grower can make money growing grapefruit, but should this quarantine go into effect it may cause considerable hardships among the growers who are just beginning to make a small profit in the last few years.

The attention of the Sanidad Vegetal was called to the Mexican, or otherwise known as Morelos, fruit fly and on May 23rd the Cuban government issued a decree prohibiting the importation of all oranges from Mexico. On the 8th of August we purchased in Havana, oranges from Vera Cruz. The incident was reported and was received with the characteristic Latin shoulder shrug, the excuse being that the government did not have sufficient funds to inspect every boat that came in, but it was apparent that the importer had never been notified of the decree. The Morelos fruit fly is a very serious pest and is said by many entomologists to be equally as dangerous and destructive as the Mediterranean fruit fly.

Cuba is peculiarly situated in regard to insect pests as the Cubans are great lovers of fruit and import fruits from all over the world and vessels from all parts of the earth enter and leave the sixty-odd ports in Cuba daily.

The greatest crop that Cuba furnishes to the United States at the present time is the red Spanish pineapple. The whole structure of the pineapple industry is produced on the patron basis, the colonia or grower being directly responsible to the man who furnishes the plants and pays him a small amount for the pineapples grown. The pineapple crop is one that is shipped within a period of sixty days, from the middle of May to the middle of July, and last year the Cuban crop amounted to over a million boxes. In former years it has been the custom of the Cuban growers to ship the pineapples which are known as "Hechas" or full. The full pineapple is nearly grown and has a slightly lighter coloring around the dark green eyes but the prevalence of brown fusarium and mealy bugs and brown rot have caused the growers to ship these pineapples before the rainy season starts to prevent the spread of the disease and pests, consequently last year there was a large portion of the crop shipped grass-green, and even then the average decay in transit for all shipments was about twenty per cent. This is ruinous to any industry and most of the growers lost much

and in addition to that they shipped fruit which in accordance with our standards would be classed as deleterious as Florida must confine her shipments of oranges and grapefruit on a basis of proportions of acids to solids of the juice of the fruit. Due to our regulations not covering pineapples we have allowed foreign producers to dump large quantities of fruit on our markets which are not fit for human consumption.

We have taken ripe pineapples and pintons and have kept them as long as fourteen days without refrigeration, showing that if pineapples are properly handled they will not decay in transit. The Cuban pineapples are harvested by very crude methods. A man walks through the fields with a "machete," cuts the pineapple off and puts it in a basket carried on the head of the worker who follows him; the worker with basket carries it to the ox-cart and the pineapples are literally thrown in and stacked twenty-five high, one on top of another. The ox-cart has no springs and the pineapples get a severe jolting by the time they reach the packing house. No field crates or any container even resembling field crates are used. Upon the arrival of the cart at the packing house the pineapples are thrown as counted on the packing house floor. A sizer, human, not mechanical, picks up the fruit and throws it into respective piles as he sizes it. The pineapples are then wrapped and placed in boxes, and boxes are moved about the packing house and to the cars tilting end for end. There is not any fruit except the greenest of green pineapples that can stand this rough treatment.

Another cause of decay is that the pineapples are picked during or after a rain and the crowns are full of water—no effort being made to dry them before packing.

In order to protect their industry the Cubans have prohibited the exportation of all pineapple slips and

plants. This was aimed primarily at the Florida East Coast pineapple growers whose business is just beginning to rejuvenate, and also at the production of pineapples in Haiti which has been undertaken by a California canning company.

The pineapple beetle is a very serious pest in Jamaica and it is practically impossible to grow pineapples commercially on that account. Jamaica is very close to the eastern end of Cuba and many little schooners come into the eastern ports, a number of them with these insect-laden pineapples as small portions of their cargoes. It will only be a question of time before the pineapple industry will have this pest to fight. In their decree prohibiting the exportation of plants the Cuban government is inadvertently protecting the American pineapple grower from the pest.

Complaints from the American government and others with reference to pests and insect diseases in Cuba has had only one result—that the government will appropriate the money to fight the pest and the money will find itself in other channels rather than in fighting the disease. By employing an entomologist and plant pathologist with good administrative capacity would be the only thing that can save Cuban agriculture today. The mosaic disease of cane which is very prevalent in eastern Cuba cuts down the sugar content as low as twenty-five per cent of normal. The sugar growers are beginning to realize the importance of this and are lending their individual efforts to the extermination of the disease by planting resistant varieties.

Many returning travelers, in fact a majority of our foreign tourists, are ignorant of the plant quarantine regulation and board the ship with almost every conceivable kind of plants, seeds, fruits and vegetables. The black fly has been intercepted at Key West in eighteen instances over a short pe-

(Continued on Page 30)



A Cuban Pineapple field just before harvesting time.



# Recent Improvements in Packing House Equipment

By B. C. Skinner, Dunedin, Fla.

Development in packing house machinery the past three or four years has been largely the result of the demand by the packers for machinery which would make a better pack. Better cleaning, better polishing, and more accurate sizing were of great importance in order that the package might come up to the standard demanded by the buyers of fruit.

In order to secure better cleaning, washers with brushes as long as eighteen feet are now quite common; sixteen feet is also popular.

A few years ago ten-foot and twelve-foot washers were considered amply large, but now they are considered too short to properly clean the fruit.

There is a tendency also towards a greater number of runways in the washing machine for a given capacity so that the fruit need not be hurried through the machine but have sufficient time for thorough cleaning.

The changes in the fruit driers have been made with a view to getting better drying which necessitates larger driers handling a larger volume of air. This has been accomplished by Duplex and Double Duplex driers which have two conveyors for the fruit in the case of the Duplex, and four conveyors in the case of the Double Duplex driers. The fruit start at the bottom of the drier and work upward while the air starts at the top and works downward through the fruit so the driest fruit meet the driest air. This accomplishes the desired end of a greater area in the drier for the conveying of fruit, giving a longer time in which the fruit can be subjected to the blast of air, without greatly increasing the floor space occupied by the drier in the packing house.

In order to secure a better polish on the fruit extremely long polishers have been used the past two or three years. Several polishers as long as eighteen feet with from ten to twenty-five percent more brushes than are used in the washing machine on the same unit are common in a number of packing houses. While this length is the extreme, there are a great number of ten and twelve foot machines.

The most marked improvement in sizing machines in recent years, is the quick adjusting device, which permits changing the machine from or-



B. C. SKINNER

anges to grapefruit or tangerines very quickly. Without this device it was formerly necessary to turn each adjusting screw to an estimated point, then run a few fruit and try the pack to see how it came out. The result was, a great number of boxes of poorly sized fruit were packed before the sizer could be adjusted accurately. It sometimes took from one to two hours to get these machines in perfect adjustment. The quick adjusting device overcomes this difficulty.

With the quick adjusting device, there are three separate screws; one for oranges, one for grapefruit and one for tangerines. Changing the previous setting for oranges or grapefruit so that no matter what minor adjustments might be made while operating on tangerines, the machine when it is changed to oranges will be set exactly the same as it was when last running oranges. The foreman can run his fruit, confident that the size will be correct. He knows he will get perfect sizing of fruit from the very start of running the crop, which was practically impossible to do without this quick adjusting device.

Improvements in the mechanical construction of the machine are being made frequently, but the most outstanding improvement of this nature is the development of the individual motor drive. The use of the motors on the individual drive machine practically eliminates transmission machinery and reduces the power consumption from twenty-five to fifty percent. It also eliminates a great deal of danger from men being injured on line shafting and belts. It reduces considerably the noise in a packing house. It permits the foreman to operate only the certain machines he needs at the time he is running, thus

saving unnecessary wear as well as saving power.

The use of the variable speed motor in driving the fruit conveying belts which feed the washer and convey the fruit through the drier, permits a large capacity unit to be operated at small capacity with a small crew of men when necessary to do so. It also permits packing fruit which is difficult to grade, at a slower rate of speed than those which can be easily graded. This is quite necessary when running a crop of rough or poorly sprayed fruit. It enables the foreman to operate more slowly on damp days in order to secure better drying, or when handling very dirty fruit.

Practically all changes in machinery are the result of demand by the fruit packers. The manufacturers endeavor to give the fruit packer what he demands. In summarizing the above changes, it will be seen that the large percentage of these improvements are for improving the pack and giving it a better appearance.

## NEW ASSOCIATIONS

### IN VOLUSIA COUNTY

Two new citrus grower associations have been organized the past week in the territory of the Volusia County Citrus Sub-Exchange. They are located at Pomona and San Mateo. Packing house arrangements are now being made for the handling of citrus crops grown by members of the two organizations. All of the fruit will be marketed through the Florida Citrus Exchange.

## BIG GROVE SOLD

### IN LAKE COUNTY

Bailey & Jane, realtors, of Orlando, made the sale of the 40-acre orange grove of C. S. McEwen at Ferndale, near Montverde, to Dr. M. L. Justice, of Marion, N. C., the consideration being in the neighborhood of \$40,000.

Bailey & Jane advise that they have a number of prospects interested in South Lake property and will announce other sales shortly.

Do you tell your editor when something in his paper pleases you? Once in awhile you tell your preacher he has a good sermon, so why not tell your editor the same thing about his paper?

# A Quarantine Against Fruit and Vegetables

A quarantine on all fruits and vegetables offered for import into the United States, except from Canada, effective November 1, was announced Wednesday by the Department of Agriculture as a step toward keeping certain injurious fruit and melon flies out of the country.

Under special permit shipments of certain fruits and vegetables may be brought into the country, however, at the discretion of the Federal Horticultural Board. The fruits and vegetables open to entry include the principal items which hitherto have been important commercial factors.

The action of the department in imposing the quarantine restrictions was taken after more than six months' consideration of the subject and hearings at which all interests were represented. The quarantine was considered necessary to protect American crops from the insect pests known to be a serious factor in various parts of the world, which have not yet made their way into the United States. The restrictions on the entry of fruits and vegetables provided for in the regulations are believed to be the least which would give the protection considered necessary.

No restrictions are placed on imports from Canada and no prohibitions are placed on fruits and vegetables from Mexico other than those that have long been in force on account of the Mexican fruit fly, avocado weevil and certain potato pests.

The Federal Horticultural Board in a statement said Africa and the sub-tropical and tropical regions of Europe, Asia and South America and the countries and islands of the Pacific are permitted under the quarantine to export to the United States tables, the same in fact as permitted from temperature zone countries while the excluded fruits other than oranges from these countries and islands are for the most part of small commercial importance.

Special provision is made under the regulations for imports of fruit and vegetables from Victoria, South Australia, Tasmania, Chile and Argentina on the assurances received from responsible officials as to the freedom of those countries from fruit fly.

"That this country has not become invaded by fruit flies, the worst of good fortune than otherwise," the board declared. "The danger is a rapidly growing one with the increase of the world commerce and especially

with the shortening of time between countries by the building of speedier ships.

"It is known that various countries invaded by fruit flies is due more to preparations to increase their fruit and vegetable exports to the United States, and some of the occasional shipments which have already reached us from such countries have proved to be infested with fruit flies. The risk which will follow the more frequent and larger shipments is evident, and the necessity for taking prompt measures to protect the American fruit cultures from these pests would seem to require no further argument."

## WHAT ONE CHAMBER OF COMMERCE HAS DONE

The following communication from the Lake county board of commissioners to the Lake County Chamber of Commerce shows in a very emphatic manner what a properly conducted chamber of commerce may mean in material development to a county.

It is interesting to note that during the four-year period covered the citrus production of Lake county has more than trebled, the increase being from four hundred thousand boxes to one million, two hundred and fifty boxes in four years.

What the Lake County Chamber of Commerce has done for Lake county, it is fair to presume that other organizations of like nature, efficiently managed, would be able to do for other counties.

Office of Board of Commissioners,  
for Lake County, Florida.

Tavares, Fla., July 9, 1923.

Mr. R. P. Burton, President  
Lake County Chamber of Commerce,  
Tavares, Florida.

Dear Sir:

During the past four years there has been paid from county funds to the Lake County Chamber of Commerce the sum of \$37,131.43—less than the cost of one mile of permanent road.

By your records during that period you have shown that through your influence 381 families have been located in Lake county.

In the same period the assessed valuation of Lake county has increased from \$6,700,000 to \$11,500,000.

In this period the population of Lake county has doubled, the produc-

tion of citrus fruits increased from 400,000 to 1,250,000 boxes, and in every part of Lake county there is evidence of tremendous growth and great prosperity.

In including in our budget for 1923-24 1¼ mills we, the commissioners of Lake county, believe that it meets with the approval of 100 per cent of our citizens, who are fully cognizant of the worth of the Lake County Chamber of Commerce and the affiliated organizations.

This millage is not an expense, but an investment, and is paying tremendous dividends in building up Lake county, cementing communities to eternal friendship and in creating a county loyalty unparalleled in the United States.

Respectfully,

M. V. Simpson,  
Chairman County Commissioners Lake  
County, Florida, and

C. Z. Osborne,  
W. H. Richey,  
J. W. Gause,  
G. F. Revels,

Associate Members.

Attest: T. C. Smyth, Clerk.

## HAWKINS SUCCEEDS STAFFORD

J. W. A. Hawkins formerly manager of the Lake Wales Citrus Growers' Association, has been appointed manager of the Lakeland Highland Citrus Growers' Association, it is announced at Haskell. He succeeds Dr. A. H. Stafford, who recently resigned to take over the management of the Babson Park association.

Some crazy guy wrote that song. "We ain't got no bananas" and tickled the whole universe. Some of the days some farm boy is going to start humming. "We got sows and cows and hens at our house" and thousands of Florida farmer lads will join him in the chorus.

Florida is destined to make greater advance and progress in the next ten years than any state in the Union. She is a wonderful state doing wonderful things in a wonderful way. Watch Florida and you will see big things happen.

As long as farm folk keep their feet on the ground, why worry about those who don't get off a pavement except to go up in the air.

The cattle business will never be profitable as long as cattle and ticks are raised together.

# The Rust Mite and its Control

By W. W. Yothers and A. C. Mason, Bureau of Entomology, Orlando

In order to combat an insect pest successfully it is of the greatest importance to be able to recognize it in all its stages, to understand its biology and life history. In fact every bit of knowledge concerning an insect or mite helps either directly or indirectly to devise methods for its control. To fight a pest without taking into consideration its biology and life history may be compared to shooting at a target without taking a deliberate aim. If the target is big and a sufficient number of shots are fired no doubt some of them will hit it. If spraying for the several pests on citrus is done often enough with many different kinds of materials, no doubt fairly satisfactory results may follow. In either case the cost will be out of all proportion to the results obtained.

**Hand Lens:** Owing to the minute size of the rust mite a hand lens is essential to enable the grower to recognize its presence. A lens magnifying 15-diameters with a  $\frac{3}{4}$ -inch focus is satisfactory. Such a lens will enable the grower to see rust mites and their eggs and various other tiny pests which may infect citrus trees. Such a lens will also not only help the grower to put insect control on a more scientific and economical basis but will reveal to him some of the beauties and wonders of the insect world.

**Origin:** Since the rust mite was first discovered in Florida it has always been considered to be a native species, recent information, however, indicates that this is not the case. The rust mite has been present in certain citrus regions in Japan for the past few years and the growers and entomologists are positive that it was introduced into their country on citrus nursery stock which came from southeastern Asia, the original home of citrus fruits. In all probability the rust mite's original home is also southeastern Asia and it has followed its host around the world for several centuries and was introduced into Florida along with the introduction of citrus varieties from foreign lands.

**Host Plants:** The rust mite is found, in so far as is known, on all species and varieties of citrus fruits. Its preferred hosts in the order named is: Lemon, grapefruit, sweet oranges and tangerines.

**Rust Mite:** The adult mite is a very tiny creature. A single rust mite can scarcely be seen with the

unaided eye unless its location is first determined with a hand lens. When abundant they appear on the fruit like a layer of yellowish dust and the leaves and limbs have a yellowish, fuzzy appearance. The rust mite is a lemon-yellow colored wedge or triangular shaped creature about one one hundred and twentieth of an inch in length. It has a beak which is inserted into the fruit or leaf in order of course to extract the juices of the rind or bark for its sustenance. Rust mites have four legs and crawl around a great deal. In fact, it is a restless creature and will not live in confinement at all. It would not live in the ordinary insect cages that are usually used for determining the life history of this species. This consisted of a gelatine capsule, the closed end of which was cut off and the capsule then fastened on the fruit or leaf by means of melted paraffine. The adult stage extends only over a period of a few days in summer but for a much longer period in winter.

**Egg:** The rust mite egg is very tiny indeed and is a most beautiful pearly white color. If rust mites are abundant these eggs are very easily seen by means of a hand lens. It requires a minimum of three days in summer from the time the egg is deposited until it hatches. While eggs are readily found wherever rust mites are abundant either on the leaves or branches they are most abundant usually on the fruit and are found in the small indentations of the rind.

**Young Mite:** These stages have the same general appearance as the adult stage, but are lighter in color and are much smaller. When the young mite is about three days old it molts, becoming an adult.

In summer the minimum time from egg to egg is about eight days, and the average life cycle is not far from nine days. In the winter time this life cycle will be nearly two weeks.

**Period of Abundance:** While it is true that rust mites may be found in a citrus grove practically throughout the year, they are usually very scarce two or three weeks before the beginning of the rainy season in the middle of June until around the first to middle of November. This scarcity is due to the presence of an entomogenous fungus which destroys the mites like a great pestilence. It is in the drier spring months that the rust mite

causes its greatest damage, and perhaps 90 per cent of the damage resulting from the pest is caused during the months of May and June. During the latter month they are present on the fruits in countless millions.

**Injury:** The resulting injury from this pest makes it rank at least third in importance of the pests attacking citrus in this state. No doubt the injury is much greater than either growers or entomologists realize. Most citrus growers are more or less familiar with the injury which this pest causes. When present in great numbers on the young branches a bluish or brownish discoloration results. No doubt the presence of millions of rust mites on the young branches cause great devitalization to the trees. When abundant on the leaves a brownish discoloration usually follows. In cases of severe infestation they prevent the leaves from attaining their normal size.

It is on the fruit, however, where the most serious damage or injury follows. If the infestation is severe on the young fruit sharkskin or silver scurf follows. Such fruit usually is very small and the skin or rind sometimes becomes an inch or even more in thickness and it should be considered a kind of gall. These fruits are always culls. If the rust mites are somewhat less abundant they produce russet fruit which of course is shippable but the grade is lowered. As a general thing russet fruit brings about fifty cents less a box than the bright fruit. On an average the size is reduced about 12½ per cent. Since the rust mites injure the epidermal layer of cells the waxy covering of the fruit is destroyed. There is considerable data to indicate that fruit thus injured by rust mites is more subject to decay organisms than is fruit which has the natural waxy covering. Evaporation of the juices is also much more rapid in rust mite injured fruit than in bright fruit.

**Methods of Control:** It is not yet known to me who first discovered that the rust mite was so extremely sensitive to sulphur, but this has been known in Florida for many years. Due to this sensitiveness the rust mite is about the easiest pest to control that we have. I do not know of any species that is so sensitive to any form of gas or spray as the rust mite is to the sulphur sprays or dust. We found in laboratory experiments that



one part lime sulphur solution to 8000 of water would kill a few mites, while 1-6000 killed all the mites present. A dilution of 1-250 prevented the eggs from hatching. Rust mites are also killed if placed in the top of an air-tight box upon the floor of which sulphur has been sprinkled. This experiment indicates that the fumes or the oxidation of sulphur will kill rust mites at some distance.

In the field practices, however, such dilutions are not satisfactory. After several years of experience it has been found that lime sulphur should probably be used around 1-75 or 1-66. A dilution of 1-50 is also satisfactory and will very seldom cause damage. The dilution of 1-25 has been used to considerable extent, but this is entirely too near the border line where damage will result and should not be used for practical grove spraying.

In spraying for rust mite control it is not so essential to do a thorough job as it is when spraying for white flies or scale insects. A reasonably thorough job, however, should be done in order to insure good results.

**Dusting:** Dusting with sulphur is being used quite extensively and owing to the large acreage which can be dusted in a very short time it is filling a long felt want for the Florida citrus growers. Since no sticker seems to have been discovered which will prevent sulphur on citrus foliage from being washed off by rains dusting is more or less a dry weather method, and its value depends primarily on the length of time after the dusting until a drenching rain washes the sulphur from the trees. If the sulphur stays on the trees three days, which is the length of time necessary for the rust mite egg to hatch, not only will all the mites themselves be killed, but all the young mites which have hatched from the eggs will also be killed, thus securing a complete mortality. If a drenching rain occurs within this three day period the sulphur will be washed from the trees and the eggs will hatch and no sulphur being present they will not be killed. Thus a complete mortality will not be obtained and in a short time the infestation will be severe. If such a rain does take place in all probability a second dusting should be given before the expiration of the eighth day after the first dusting. However, the results obtained when heavy rains fall within twenty-four hours are reasonably satisfactory. This no doubt is due to the fact that rust mites are usually dead in twenty minutes after the dust has been applied. Of course, if the lime sulphur solution is applied a complete kill is always obtained which

should be effective over a period of six weeks.

**Cost of Dusting:** Owing to the much greater area that can be dusted on a given time than can be sprayed the cost of application is a small item. The material, however, costs much more than the liquid material. In spraying with a solution the greater part of the cost is the application. If materials are purchased at a reasonable figure and other items of cost are kept down, it should not cost more than 50 or 60 per cent as much to dust as it does to spray with lime sulphur solution. A good plan to follow is to dust during the winter and spring months, and to use the liquid spray during such times when rust mites need to be killed during periods of rainy weather.

**When to Spray for Rust Mites:** It is generally known among the citrus growers that fruit once russeted cannot be changed into bright fruit by spraying. We have also demonstrated this to be true many times in our experimental work. The use of strong sulphur solutions early in the summer may brighten up rusty fruit somewhat but the change is so insignificant as to be of little or no commercial value.

If spraying is intended for bright fruit, therefore, it must be done before russetting has taken place or before rust mites have become numerous enough to cause the discoloration.

It is a most difficult task for the entomologist to foretell any length of time in advance, with any degree of certainty when spraying will be opportune for rust mites and it is also hazardous for the grower to rely on a calendar date for obtaining best results. Although the usual and average time of maximum infestation of rust mites is during June, this time varies in different years. Sometimes this period comes as early as May 1st to 15th, and at other times as late as July 15th. This period of maximum infestation also varies somewhat according to the locality being earlier in the more southern sections. Grapefruit are also subject to rust mite infestation considerably earlier than oranges. In fact, it is reasonably certain that the abundance of rust mites varies from grove to grove even in the same locality. Many of the factors which cause an increase or decrease of rust mites are not very well understood.

For several years past in deciding if it is opportune to spray for rust mites we have been largely guided by the following rules:

1. When rust mites are abundant on the foliage fairly early in the spring spraying may be done at once

to prevent further devitalization of the trees. This would also prevent them from crawling on the young fruit. This treatment may also be postponed three weeks or a month until the mites have really appeared on the young fruit.

2. When only an occasional fruit shows the characteristic yellow fuzzy appearance, spraying may be done at once, if perfectly bright fruit is to be obtained, but little harm would result if the spraying is finished within one or two weeks.

3. If rust mites are present in sufficient numbers so that a considerable number of the fruit have the appearance of being covered with a yellow fuzz, spraying should be done at once. Even then some golden russets will show up in the early fall.

4. If no attention is to be paid to the abundance of rust mites to determine when to spray, grapefruit should be sprayed in April in southern sections and all other citrus fruit sprayed in June in all sections.

5. When fruit is held for late shipping and bright fruit is desired some spraying will have to be done in late winter or early spring.

The same rules should apply to the dusting as apply to spraying.

#### GERMANY SELLING ITALIAN ORANGES TO POLAND

According to Consul General Keene, Warsaw, in a report to the Department of Commerce, it was a long time after Poland regained its independence before oranges and other tropical fruits were sold in that country, and the revival of interest in oranges in Poland now seems due as much to Germans as to the Italian growers who have lately interested themselves in this new market. It was not until early this year that oranges could be purchased in abundance anywhere in Poland. They are of various grades, ranging from poor quality oranges to seedless and blood oranges selling at prices which constantly fluctuate in Polish marks but remains more or less equivalent to four and a half American cents. The oranges come entirely from Italy, the better grades being hand-packed and each orange wrapped in paper with the name of the Italian shipper. As far as can be ascertained the fruit is imported by numerous dealers and not by big wholesalers and comes indirectly through Germany and directly from Italian shippers who have succeeded in skipping the German middlemen. However, if oranges should be shipped from the United States, the most natural route at the present time would be via the port of Danzig.

## Crenshaw Cites Rate Injustice

The necessity for Florida growers and shippers combating the proposed increase of approximately twenty per cent in refrigeration charges, and the further necessity of their working together for a readjustment and reduction of existing rates on citrus fruits and vegetables can be well demonstrated by concrete instances of comparisons with what is paid by shippers from the Pacific coast according to J. R. Crenshaw, traffic manager of the American Fruit Growers, Inc., Orlando.

The basic rates on citrus fruits were adjusted by the Interstate Commerce Commission in 1908, according to Mr. Crenshaw, at which time Florida's output was approximately three and one-quarter millions of boxes. The adjustment at that time amounted to giving to Florida rates to certain markets, and leaving practically the balance of the United States to California. The anxiety now of leading Florida shippers for an early readjustment can be realized when it is seen that next season Florida will have almost six times as large a citrus crop as it had in 1908, and to continue to dispose of that within the same geographical limits in the eastern part of the country constitutes a heavy handicap. In 1908 California was the big producer of oranges and grapefruit. The situation has now changed and Florida last season passed California in point of orange and grapefruit production.

"We are not seeking," said Mr. Crenshaw, "any fight or contest with the railroads. However, we do feel it is our job to sell the idea to the carriers who haul our fruit that it is to their advantage just as much as ours to preserve and to help expand Florida's citrus industry. This can be done only by allowing us to go further west with our product. We have no desire to deny California shippers any rights or privileges they now possess. Our only object is to obtain corresponding rights and privileges on our products in order that we can make additional markets to take care of our added production."

Mr. Crenshaw cites a few instances of Florida's disadvantages in support of the attitude of Florida growers and shippers. To make a comparison intelligible it is necessary to equalize figures, as California's rates are per hundred pounds and those on Florida's citrus fruits are quoted in tariffs by the box. Also California loads four

hundred boxes in a refrigerator car of considerably larger capacity and affording average better refrigeration than those furnished for loading three hundred and sixty boxes from Florida. The following figures therefore are based on an actual California carload of four hundred boxes and a theoretical carload of four hundred boxes from Florida. To deliver such a carload of oranges in Seattle from Fort Myers would require the payment of a total of \$847.50 in freight and refrigeration. Shipment of a car of oranges from Los Angeles to Bangor, Maine, requires only \$644.76 for freight and refrigeration. Thus it costs Florida \$202.74 per car more to lay its fruit down in the state of Washington than it does California to deliver its fruit in Maine.

Again, from Los Angeles to Springfield, Illinois, is approximately twenty-two hundred miles. Freight and refrigeration on a car of oranges from Los Angeles to Springfield amounts to \$624.76. From Fort Myers to Bismark, North Dakota, also is approximately twenty-two hundred miles. Freight and refrigeration on a four-hundred box carload of Florida oranges to that point amounts to \$872.50. Florida's disadvantage therefore on this twenty-two hundred mile haul is \$247.74 per carload.

From Los Angeles to St. Louis is just eighteen miles further than the distance from Arcadia to Denver. It costs California \$624.76 in freight and refrigeration to transport a car of oranges from Los Angeles to St. Louis. The corresponding cost to Florida for shipment from Arcadia to Denver is \$812.00, Florida's disadvantage in this instance amounting to \$188.00.

Recently Mr. Crenshaw has been closely studying the California refrigeration rates. He says he does not find that the average basis for refrigeration charges on citrus shipments from California is any higher than that already existing from Florida; and now the carriers are proposing to increase refrigeration charges from Florida by from fifteen to twenty per cent. California shippers have not been asked for any increase, and it cannot be ascertained that any increase from California is contemplated.

In his opinion, the reason for some of these outstanding differences largely lies in the fact that in California the Citrus League has for many years

handled traffic matters of this nature for practically one hundred per cent of the shippers. In Florida, on the contrary, there has been no organization and no really organized effort on the part of the shippers. The point has been reached now, however, when by far the majority of the Florida shippers have awakened to the situation and have indicated not only a willingness but a keen desire to form some such association and as promptly as possible.

### PROSPECTS FOR

#### FLORIDA PRODUCE

Citrus prospects have improved during July but the staple crop outlook is unfavorable, according to information compiled by the local bureau of agricultural economics of the United States Department of Agriculture. Except for fruits, the report says condition has dropped during the month and light yields are inevitable on all of the state's big field crops.

Production of pineapples shows a big increase over last year and both quality and yield of the tobacco crop are better than usual.

Oranges were reported on a 94 per cent normal basis as compared with 93 per cent a month ago, 88 per cent a year ago, and an average condition on August 1 of 85 per cent. Trees are making excellent growth and are carrying heavy crops of oranges, the report continues, and says that unless some unfavorable factor develops, production will be heavy next season.

Grapefruit prospects have improved during July and show a condition now of 91 per cent of normal, compared with 89 per cent a month ago, 83 per cent a year ago, and an average August 1st condition of 81 per cent. While a percentage of groves did not set a heavy crop of fruit, an increased production is expected next season on account of the large number of young groves coming into bearing.

Limes are being harvested and the crop is turning out better than expected, the condition improving during the month. The state's peach crop was extremely light, 60 per cent of normal, and slightly under usual quality, according to the report. Production of pears has been on the decrease for some years and is light again this season, 40 per cent of a full crop.

When the last thing has been done that you can think of, Friend Farmer, install a water system for the wife. If you cannot place running water in the house—particularly in the kitchen—place a pump inside or convenient to the door.



## THE CITRUS INDUSTRY

Twenty-five

### ALL LATE FRUIT SHIPPED

A report to the U. S. Chamber of Commerce from Consul Chas. Forman, of Nueva Gerona, Isle of Pines, says:

Grapefruit is the principal product of the Isle of Pines. The importance of the industry dates from the American colonization shortly after the Spanish-American war. American farmers introduced new varieties of grapefruit from Florida and elsewhere, planted groves, and built packing houses. Modern methods of cultivation and packing are used, and a considerable industry has been built up. Most of the growers are American settlers.

The Walters is the leading variety, although other varieties are grown. Soil and climate are favorable, and the quality of the fruit is excellent.

The bulk of the crop is marketed in the United States. The fruit which ripens in time to ship from the first of August to the end of September is designated as early fruit. This fruit brings the best prices, as it comes on the market before Florida grapefruit is ready to ship. The entire season, however, embraces the period from early August until about June 1 of the following year.

### Big Gain in 1922-23

Consular invoices show that 176,802 crates of grapefruit were shipped to the United States during the 1920-21 season, 152,480 crates during 1921-22, and 229,621 crates during 1922-23. During the last season several thousand crates not covered by consular invoices were shipped to Canada and England. Shipments to England were undertaken for the first time this sea-

son and were quite successful. Shipments to Canada also were satisfactory.

The 1922-23 season was unusual in that practically all of the late fruit was shipped. The total shipments, aggregating about 250,000 crates, were larger than in any previous season. A crate of grapefruit weighs 70 lbs. net.

If we gave a little more thought and effort to control the insect and disease pests that are burdening and breaking the backs of farmers, it might not be so necessary to make so many laws.—Spuds Johnson.

Don't forget to guard your own health. Many diseases start from causes that might be prevented or removed easily.

# SCHNARR'S

The Standard Spray and Dust Mixtures for Florida. They have produced

**MORE Better Quality Fruit LONGER**

### Schnarr's Spray Formula

*Place orders NOW for the Fall Spraying*

**Schnarr's Lime Sulphur Solution**

**Hand and Power Sprayers**

**All Insecticide Materials**

### Hand, Traction and Power Dusters

*A Size and Type for Every Purpose. Built for Florida*

**Copper Lime Dust-Sulfodust-Nicotine Dust  
All kinds of Sulphurs and Dust Mixtures**

*Deliveries from Factory, Branch Warehouses,  
and Dealers' Stocks*

We announced last year to our customers and growers generally our Dusting Materials, Grove and Crop Dusters, as well as the new and improved features of our Power Sprayers. The progress made in further improvements of our Sprayers includes a PUMP which will be self-oiling, sand-, dust-, and dirt-proof. Also our Unit Combination Duster and Sprayer has been undergoing constant tests and should be ready for use generally by the opening of next season. Complete specifications for this Unit Combination, upon which patents are pending, supplied upon request. Those interested in the purchase of either duster or sprayer, from the smallest size to the largest, should get in touch with us before buying.

Factory extensions, especially for a greater production of Dusting Materials, together with additional warehouse distributing agencies, enable us to make quick deliveries and render better service than ever before.

## J. Schnarr & Company

**Winter Haven**

**ORLANDO, FLORIDA**

**Larkins**

*H. A. Trueman, V. P. & Mgr.*

*C. E. Haywood, Manager*

*Specialists in Sprays, Sprayers and Spraying.*

**ESTABLISHED 1906**

*Homer J. Richardson, South Florida Representative, Tampa, Florida.*

## Florida Fruits Gaining in Favor

Just returned from a tour of the larger northern markets, F. L. Skelly, of Orlando, manager of the American Fruit Growers, Inc., is of the opinion that Florida-grown oranges and grapefruit stand higher today in the opinion of the fruit-handling trade than at any time in the history of the industry here. The continued improvement in grading and packing practices which has featured the last few years has made many friends where previously there was a tendency to distrust these Florida products.

The present dependability of the leading Florida packs has, in his opinion, won friends among the trade which are of equal value to the army of consumers who have made the acquaintance of Florida grapefruit and oranges through the advertising of the principal shippers. Thus Florida citrus fruits now are able to obtain the fullest appreciation of the consuming public to which their uniform juiciness and superior quality entitle them.

Mr. Skelly says he was greatly gratified with the advertising plans for the coming season on Blue Goose and AFG Florida citrus fruits, which he recently went over with the advertising department and with N. W. Ayer & Son, the big advertising agency which handles the organization's business. The increased scope and greater intensiveness of the advertising effort in northern newspapers, he is confident, will have considerable effect.

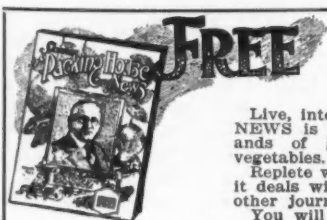
General business conditions must of course largely affect the reception in the markets of the coming season's citrus crops from both Florida and California. Mr. Skelly reports that throughout the larger manufacturing centers business conditions are generally excellent. There is no unemployment situation in sight, unless it shall be created through strikes or labor disputes. Wages are excellent in almost all manufacturing industries, and employees are prosperous. On the other hand, the middle west and the western part of the country, where the principal dependence is upon agriculture, do not exhibit the same sort of prosperity as is shown around the manufacturing centers. The farmers generally have not been making money, and the effect is noticeable throughout the business fabric of the sections in which the agricultural interest is paramount.

Mr. Skelly regards as a good sign

the recent upturn in the prices being realized in the leading markets for California Valencia oranges, which for some time previously had not been obtaining the close attention of the trade.

He has not changed his mind in the slightest as to the absolute necessity for Florida growers and shippers not only forestalling the proposed increase in refrigeration charges, but repeated in no uncertain language his previously expressed belief that the time is now ripe for Florida to insist upon obtaining a readjustment of freight rates on citrus fruits, which will per-

Continued on page 30



### WRITE TODAY FOR YOUR COPY

Live, interesting and readable, the **PACKING HOUSE NEWS** is a favorite magazine everywhere with thousands of growers, packers and shippers of fruits and vegetables.

Replete with valuable information, profusely illustrated, it deals with problems of packing and marketing as no other journal in the world.

You will find it so informative and essential to your business that you will want to keep a permanent file. 10 cents per copy, \$2.00 per year, free sample awaits your asking.

**Skinner Packing House News**  
Gulf Avenue Dunedin, Florida.

## T. W. RAMSEY

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HOUSE AND BUILDERS SUPPLIES

WINDOWS AND DOORS

We ship large or small orders

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## HOTEL TA-MIAMI

MIAMI, FLA.

The most Perfectly Ventilated Hotel in the South...

FIRE PROOF

European Plan Open All Year

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## HOTEL HILLSBORO

Tampa, Fla.

TOP O' THE TOWN

European Plan, Fireproof 300 Rooms With Baths

THE CENTER OF TAMPA

# Save Next Season's Crop Now!

**W**HILE you are planning next season's work, make sure the crop will be safe from frost. You can foresee most factors and provide for them as required, but frost comes without warning and brings failure to the grower who is not prepared.

There is great probability of a freeze next season. Weather conditions point that way. The wise grower will make sure that his groves have ample protection. Without it, his crop may be destroyed and his trees so damaged as to be unproductive for several years.

The Scheu Smokeless Heater will protect your grove or truck farm. It has proved its merit in all parts of the country. It is widely used in California, where in the freeze of 1921-22 fruit was saved by use of 50 heaters per acre with an outside temperature of 17 degrees F. "Sunkist" growers officially approved the Scheu Heater after extensive field tests and contracted with the American Can Company to supply 100 per cent of their requirements. Satisfied users everywhere can tell you this device has fully lived up to ex-

pectations, fighting frost efficiently and bringing through their crop.

Using oil for fuel, this heater is quickly ignited. Due to the perfection of the combustion chamber, Scheu Heaters are smokeless, preventing the deposit of soot on fruit and rendering maximum heat from fuel. A regulator governs the amount of oil consumed and heat produced. As this heater is more efficient than older types, a smaller number per acre can be used.

The short stack of the Schu Heater keeps the heat closer to the ground, where it does the most good. Although it is of sufficient height to provide best combustion, many tests have proved that it is short enough to give maximum radiation.

See how this device works now. The coupon below will bring a representative who can give you a convincing demonstration—and without obligation to you. He will also tell you why these heaters, which will guard your crop for many seasons, can pay for themselves in the saving caused by fighting a single cold spell.



The Scheu Automatic Heater, an improved device which gives maximum protection. The fuel container can be quickly detached, so that a full container may be readily changed for an empty one. The deflector sends the heat downward.

Canco smudge pot, holds about 10 quarts. Cheap, simple, effective. Orchards equipped with 100 No. 2 Canco smudge pots per acre maintain temperature at 30 degrees F., with outside temperature at 24 degrees F.

**American Can Company**  
Toledo, Ohio. Los Angeles, Cal.

**Skinner Machinery Co.,**

DUNEDIN, FLA.

Distributors for Florida, Georgia, Virginia, North and South Carolina and Alabama.

For truck farms protection can be had in No. 2 Canco smudge pots at a cost of \$50 per acre. Combination protection can be had with our other style heaters at slightly higher cost.

Skinner Machinery Co.

Dunedin, Fla.

I have \_\_\_\_\_ acres of \_\_\_\_\_ and would like a demonstration of the Scheu Grove Heater. This does not obligate me in any way.

Name \_\_\_\_\_

Address \_\_\_\_\_



## Look for Slow Development in Grapefruit Canning

Mr. Paul Stanton, manager of the Polk Company, owners of grapefruit canning plants at Miami, Haines City and Vero, looks for rather a slow development in the demand for grapefruit hearts on the part of the consuming public. While confident that eventually this industry will become firmly established and the demand in keeping with the supply, Mr. Stanton believes that canners must not look for these conditions to come immediately nor without considerable exertion on their part.

Just prior to his departure for the northern headquarters of the Polk Company, at Indianapolis, Mr. Stanton said:

"The canned grapefruit business has undergone a very serious setback. During the past winter there was a decided demand for the goods from every quarter of the United States. The fact that the goods are delicious makes their sale a very ready one to people who have tasted them and can realize their quality. It now appears, however, the sales being made by the wholesale grocers of the United States have been going into the reservoir of the retailer's shelves, but the public not knowing of this product, and the retailers' shelves now being full of the goods which are not moving, the result has been that the market has become absolutely stagnant, and it is impossible to sell the goods remaining in canners' hands. Porto Rico and Florida packers have fair stocks of the goods remaining unsold, and to all appearances at the present time it will be well into the winter before these stocks can be disposed of.

"Some weeks ago the Florida and Porto Rican canners met in Washington and formed an association with the purpose of going into a general advertising campaign. The inability of one of the large interests, however, to enter into this general publicity, has necessitated its postponement, and it is now uncertain whether or not it will be entered into in the near future. It is generally conceded that advertising would ultimately make a popular seller of canned grapefruit, and bring it into its own, but this would require time and considerable expense.

"One or two of the large packers will probably undertake an advertising campaign of their own, in fact, have done so, but it is a slow, up-hill process and will take at least three

years to obtain a franchise in the public mind regarding canned grapefruit. If anyone doubts this, let him circularize the jobbers and brokers of this country, and see what the resistance is. The market is absolutely lifeless and it is going to take some time and a lot of effort to revive it.

"We expect to operate in a very conservative manner this next winter, but we feel the growers of the state of Florida should be advised not to expect a very large outlet from the canners this year in marketing their product through canning house channels.

"There have also been future prices named on the canned product, very materially under the last year or present price, which means the canner who contemplated putting his profits in advertising will have that much less with which to further publicity for the industry.

"Our faith has never weakened in the ultimate outcome of the proposition, but it is going to take several years' hard work and large expenditures to get the industry in shape to be a very great benefit to the growers of the state."

### COUNTY AGRICULTURAL AGENTS

Everybody's football to kick around and everybody's servant to help in the solving of all kinds of problems from the simple one of curing the old gray mare's colic to the highly specialized art of making the family baby laugh, that is the job of the county agent. Few realize just how important he is. A recent editorial in The Breeder's Gazette shows, however, that people are coming around to consider Mr. County Agent something more than an unnecessary evil. The editorial reads:

In answer to a question, all of our subscribers whose names have been on our list for several years know that The Gazette has steadfastly advocated and defended the county agricultural agent as a practical aid to farmers.

A marked improvement in the character of the service given by county agents has been registered in recent years, due to the fact that there has been an increase in the number of trained and experienced men adapted to this work, and to the further fact that the function of the county agent

is better understood and more clearly defined than it has been in the past. Despite the agricultural depression, the number of county agents has increased. This in itself is a tribute to the value of their service to farmers.

The county agent who knows his job, and has the personality and temperament which are necessary as supplements to his technical qualifications, is in daily, personal contact with farmers. He is therefore in a unique position to counsel and advise, and to speak and act as their representative. Their practical problems are his. Together they are solving those which can be solved. The solution of local problems in agriculture will automatically dispose of most of the larger solvable agricultural problems of state and nation. This is working from the bottom up, rather than from the top down.

### PACKING HOUSE ACTIVITIES FOR WINTER TRADE

The Sebring Citrus Growers Association, which is affiliated with the Florida Citrus Exchange is planning an extensive campaign for publicity for the coming year. At the last meeting of the directors held recently, a marking machine costing \$2,500 was ordered. This contrivance will stamp the Sealdsweet trademark on one side of the fruit and the name, Florida Citrus Exchange, on the other side. This stamp will be placed only on first and second grade fruit, and will protect the growers and purchasers alike from fraud. It will impress on consumers the superiority of Florida fruit especially that handled by this cooperative organization, and will create a demand for this particular brand.

Though the packing season is over the plant is still a busy place. All machinery and equipment is being cleaned, adjusted and repaired and the old field boxes are also being mended, and new ones made in preparation for the coming season.

Work was started by G. N. Capwell on the erection of a structure 24x60 feet, to contain four coloring rooms with a capacity of 3,500 boxes at once. No fruit will be colored at any time that does not come up to the acid test as this would be in direct violation of the policy of the Florida Citrus Exchange. These additions have become necessary owing to the large number of new groves which will come into bearing this fall.

The output of the Sebring association will be nearly double next year what the 1922-1923 season was, and added space, equipment and help will be required to handle it.

## Many Counties Buying Webb Clearing Plow

Harlee & Harrison, Palmetto, Florida, manufacturers of the Webb Clearing Plow, report that many of these plows are being sold to Florida counties for use in road clearing work. Hillsborough county now has one of these plows at work in its road department clearing roads under the three million dollar road bond issue. Only recently DeSoto county purchased a machine for work in clearing the roads in that county. On the east coast, too, several counties are using the machine in road building operations.

Many contractors for clearing work are using these machines in preparing land for cultivation, having found it the only machine which will successfully cope with the heavy growth of saw palmetto on the waste lands of Florida. By the use of these powerful and indestructible machines and a tractor for motive power, one mechanic and one plow tender can clear from four to eight acres of saw palmetto in a working day of nine hours, leaving the land in shape for piling and burning the palmetto brush.

This plow is no experiment. It has

been practically and successfully demonstrated under most adverse circumstances to many interested growers who have unanimously expressed themselves as more than pleased with its perfection of operation. It is being used by many growers in preparing their land for citrus planting.

The Webb plow is a most unusual machine and has a most unusual history. The plow was invented and first built by a negro named Webb who was lacking in education and mechanical ability, but who had worked out the plan of this machine and had it built piece by piece in various foundries and machine shops in Palmetto and neighboring towns. The first plow built proved its practicability in coping with saw palmetto and a patent was issued on May 5, 1917.

In 1920 the right to manufacture and sell this machine was bought by Harlee and Harrison, who have since manufactured the plow in their factory in Palmetto. They have placed many of these machines with counties, contractors and large land owners and up to this time the demand for

the product has exceeded their ability to supply the machine. Recently, however, additions to the factory and increase in the working force has permitted the manufacture of the plows on a much larger scale and they are now being turned out in considerable quantities, enabling the manufacturers to guarantee prompt delivery on all orders.

The machines are distributed from the Harlee and Harrison store rooms at Palmetto, Bradentown and Sarasota.

### INCREASING CAPACITY

Additions and improvements costing approximately \$10,000, are being made this summer to the packing house of the Waverly Citrus Growers' Association. A new mezzanine floor is to be erected in the plant, new machinery installed and some cottages built for housing plant employees. When the improvements are completed the packing house will have a capacity of 125,000 boxes of fruit a year.

One Florida farmer is known to have cleaned up and beautified his place in order that he might sell it; but when he had done these things, he realized that he could not afford to sell out.



## Allen Picking Bags

Patented

NOW READY FOR DELIVERY

\$36.00 per Dozen F. O. B.

YOU CAN GET THEM FROM

Exchange Supply Company	Chase & Company
Tampa	Sanford
Standard Growers Exch.,	I. W. Phillips & Co.
Orlando	Tampa
American Fruit Growers	
Orlando	

ALLEN PICKING BAG COMPANY  
Orlando, Florida

No. 3

## A BRIEF OUTLINE OF INSECT PESTS AND FUNGUS GROWTHS

### San Jose Scale

SAN JOSE SCALE, one of the most deadly pests to deciduous fruit trees, is also becoming more and more disastrous to citrus stock trees and if unchecked may in two or three seasons completely kill the young trees and eventually destroy the older trees.

This disease is recognized quite easily, as it reaches a growth of about the size of a pin-head and resembles a tiny, grey, convex shell. Where Scale is present the leaf assumes a reddish color around the scale which is an additional warning to the grower to attack this malicious pest. The life cycle of San Jose Scale requires but a few weeks, thus several generations may develop in a year.



"ALFA" BRAND WETTABLE FLOWERS OF SULPHUR is especially prepared to combat this Scale and kindred pests. "ALFA" BRAND comes in a fine powdered form, is easily mixed with cold or warm water and an ideal spray is made by adding 10 pounds "ALFA" to 100 gallons of water. Avoid the danger of burning your trees as is commonly done with Lime Sulphur Solution, by using "ALFA" BRAND. "ALFA" gives excellent satisfaction for use with Arsenate of Lead, Bordeaux Mixture, Oil Emulsions, etc., where combination sprays are desired.

Buy "ALFA" BRAND and mix your own spray at nominal cost.

STAUFFER CHEMICAL COMPANY OF TEXAS  
711 Scanlan Bldg., Houston, Texas.  
Florida Distributors:

Chase & Company	Sanford, Fla.
Exchange Supply Co.	Tampa, Fla.
Florida Insecticide Co.	Apopka, Fla.

## Florida Leads in Oranges and Grapefruit

Florida sold more oranges and grapefruit in the United States and Canadian markets, in the ten months ending last July 1, than did both California and Porto Rico, together.

To be exact, this state's proportion of orange and grapefruit shipments in this period was 50.1 per cent. California marketed 46.7 per cent of the orange and grapefruit crop, while little Porto Rico shipped the remaining 3.2 per cent. to this country.

These figures were announced at the headquarters of the Florida Citrus Exchange. The comparison of shipment from the various sections, as made by the Exchange, includes only oranges and grapefruit. It does not take into account the California lemon crop, amounting to more than 12,000 cars, due to the fact that Florida is not a commercial factor in the lemon industry. The following table shows grapefruit and orange shipments from Florida, California and Porto Rico, from Sept. 1, 1922, to July 1, 1923:

Florida		
	Carloads	Per cent
Oranges	24,616	28.7
Grapefruit	18,641	21.4
	43,257	50.1
California		
Oranges & grapefruit	40,697	46.7
Porto Rico		
Oranges & grapefruit	2,824	3.2
	86,768	100.0

California's shipments, as shown here, are lighter than usual, due to a short crop last year. Florida's crop for the past season showed an increase of about 15 per cent over what it was in 1921-22, when it totalled only 13,500,000 boxes. The crop last season approximated 16,000,000 boxes.

There is every indication, barring all possible calamities, that the Florida orange and grapefruit crop will in a few years exceed the total orange, grapefruit and lemon crop of California, in the opinion of Exchange officers. The condition of Florida groves was never better than it is now, and it is being generally predicted that next season's crop will run from 18,000,000 to 20,000,000 boxes. There are now more than 55,000 acres of citrus groves in Florida that have not yet come into bearing, which, even if another tree is never planted, will in ten years give Florida a crop estimated at more than 30,000,000 boxes.

The marketing situation brought about by the rapidly increasing Florida crop, Exchange officers declare, will necessitate the continuance of na-

tional newspaper and magazine advertising to develop sufficient demand to profitably sell the fruit. Florida Citrus Exchange has already anticipated the need for greater sales effort and has laid plans for the extensive advertising of its Sealdsweet fruits next season.

When the citrus growers and shippers of this state get together and sell their crops cooperatively, instead of in competition with each other, and when they all cooperate in the development of new markets and new consumer demand, there will be no trouble, in the opinion of Exchange officials, in profitably disposing of any Florida crop, even though it be greatly increased in size.

## FRUIT QUARANTINE MAY SAVE AGRICULTURE

Continued from page 19

riod of time, the greatest of these being taken from a wreath that was in a casket. Very few people read the customs declarations, and even though they find certain plants prohibited on the lists they ignorantly or unwittingly hide them in their baggage. A great deal of this would be overcome should the customs department furnish a separate declaration which every one must sign, listing the plants, etc., that are brought into this country. This should be separate and distinct from the customs declaration. The returning travelers will no doubt say that the government would be exercising unnecessary formality which leads to a great amount of red tape, but when we consider that we have with us today foreign enemies in the form of boll weevil, grain rust, potato rot, chestnut blight, peach borers, corn borers, and innumerable other insects and diseases costing us well into the billions of dollars each year for short crops and control costs, it would seem that we are not enforcing a rigid quarantine any too soon to protect our greatest industry—Agriculture.

By producing 8,410 pounds of milk and 519.04 pounds of butterfat, Toronto's Eureka Coomassie 504651 (this is the name of a Jersey cow), owned by Meadowoaks Farms, Bartow, has become the champion junior two-year old butterfat producer of Florida.

## FLORIDA FRUIT GAINING IN FAVOR

Continued from page 26

mit of their distribution over a large portion of the country at all times of the year when shipping is practicable. He says the American Fruit Growers, Inc., will exert itself to the utmost to do its part in bringing about such a readjustment just as promptly as possible.

## BANANA GROWERS TO HOLD

### JUBILEE AT BARTOW

There will be a jubilee celebration at the annual meeting of the Florida Banana Growers' Association in the high school auditorium at Bartow, October 18. The business of growing bananas commercially in Florida has been placed on a sound practical basis, and the recognition which this industry has received at home and abroad is very convincing evidence of its substantial character. Secretary W. E. Bolles, of Oldsmar, has received correspondence from banana growers in Central America, the West Indies, the Canary Islands on the west coast of Africa, Hawaii and the Philippine Islands, showing the widespread interest in the business of growing this leading food-fruit in Florida. One big grower in Central America wrote to Secretary Bolles that the Florida growers have nothing to learn from his country. The work there is carried on in a very crude manner, while the Florida growers have developed the intensive method of banana culture, which means more than cultivation, and as a result the growers here are making very much more money per acre than anywhere else in the banana-growing world. One man living in Peru wrote that he and several of his friends will come to Florida to go into the banana-growing business soon. The attendance at the Bartow meeting is expected to break all records, many applications for membership are being received, and the public will be admitted free to hear the discussions by practical and successful Florida banana growers.

The thoughtful farmer right now is seeing that his corn crib is cleaned of weevils for storing the present crop. If he has no tight crib, he will build one, for then he will be able to fumigate with carbon disulphide and protect his corn from the ravages of this pestiferous insect.



## CITRUS SERVICE CORPORATION

Reliable Scientific Service  
Orlando, Florida.

July 19th, 1923.

Brokaw & Clarke,  
Orlando, Fla.

Attention Mr. W. H. Brokaw.

Dear Sir:—

We have just finished setting 113 acres of citrus for the Lake Apopka Groves Co., near Apopka, where you furnished the majority of the trees.

We wish to thank you for your prompt deliveries and willingness to co-operate with us in every way that was possible.

Your trees were good trees, good root system and were kept in perfect condition. They put out their new growth within 8 days after planting and are doing fine.

Hoping to be able to do more business with you as we progress with our developments,

We beg to remain,

Yours very truly,

CITRUS SERVICE CORPORATION,  
Per Clay Binion, President.

THE BEST IS NONE TOO GOOD

## Brokaw & Clarke

Nurserymen

Office Room 4, Watkins Block

Telephone 731

Orlando, Florida

## The Angebilt

ORLANDO, FLORIDA

Florida's newest and finest  
Commercial and Tourist Hotel.  
Special attention and courteous service to Floridians and commercial men.

250 Rooms—250 Baths

EUROPEAN — FIREPROOF

WURT. W. WARNER,  
Manager.

# COOPER CORDS

## THE 12,000 MILE SUPER-TIRE

### COOPER NON-SKID TREAD

A "road gripper," unusually deep and high-shouldered. Tough and enduring. Extra heavy air-bag cured in open steam. The Tread design is exceptionally attractive.

### COOPER SPECIAL BREAKER

Of the most durable, long fibre Staple Cord. Impregnated thoroughly with purest gum, and affording perfect protection to carcass.

### COOPER EXTRA CUSHION

Soft, flexible, live rubber that not only absorbs the punishing shocks but binds both Tread and Cord into an enduring unit. So expertly and carefully made as to eliminate practically all chance of Tread separation.

### COOPER GAMMET BEAD

Non-stretching, extra seven ply wire that holds Tire firm to the rim.

### COOPER CARCASS

Of the finest obtainable long staple, combed Egyptian Cord. Exactly tested. Every layer or ply scientifically impregnated with purest gum. A 34 by 4 Cooper Cord is 6 ply construction (absolute regular cord standard). A 34 by 4½ is 8-ply construction (super oversize).

WE ONLY ASK A TRIAL ON YOUR NEXT TIRE PURCHASE

	Findlay Fabric Guaranteed 6,000 Miles	Findlay Cords Guaranteed 10,000 Miles	Cooper Super Cords Guaranteed 12,000 Miles
30x3	\$ 7.50		\$ 9.50
30x3½ cl	\$ 8.50	\$ 9.90 Jr	\$13.50
30x3½ ss	\$ 9.50	\$10.85 Jr	\$13.50
32x3½	\$11.75	\$15.00	\$17.50
31x4	\$13.50	\$17.75	\$19.75
32x4	\$13.90	\$18.75	\$21.75
33x4	\$14.40	\$19.00	\$22.00
34x4	\$14.75	\$19.50	\$22.50
32x4		\$23.90	\$28.50
33x4½		\$24.80	\$29.00
34x4½		\$26.00	\$30.00
35x4½		\$26.40	\$31.00
36x4½		\$27.00	\$32.00
33x5		\$30.00	\$35.00
34x5		\$30.75	\$35.50
35x5		\$31.90	\$36.00
36x6			\$65.00

Mail orders sent prepaid when check accompanies order, or sent C. O. D. subject to examination and return if not satisfactory.

## AMERICAN TIRE COMPANY

Florida Distributors

310 Franklin St. TAMPA Telephone 4245

328 W. Forsyth St, Jacksonville

116 Central Ave., St. Petersburg, Phone 166-M

11 Court St., Orlando, Phone 1198

We carry a complete stock of tires at our branch store in Bartow, 195 Wilson Ave., where they may be purchased at above prices.

# Acid Phosphate and Soil Acidity

By C. A. Whittle, Soil Improvement, Southern Fertilizer Ass'n.

Does acid phosphate make the soil acid or sour?

Acid phosphate consists of lime, sulfur and phosphorus. Among these only sulfur is regarded as having possibilities of creating soil acidity; but in acid phosphate the lime and sulfur combine, the lime eliminating its acidity.

Therefore when acid phosphate is applied to soils it does not make them acid. Long uses of acid phosphate by the Ohio Experiment Station and other stations show no signs of increased acidity in the soil and agricultural authorities are agreed that acid phosphate does no injury.

The only reason the word "Acid" has been used in the term "acid phosphate" is to indicate that the phosphate has been made soluble by the acid process. A more exact term for acid phosphate would be "soluble lime phosphate."

The lime is in combination with the phosphorus as well as with the sulfur. The lime-phosphorus combination is one part lime to one part phosphorus. In that combination it is soluble in water and ready for the plant to absorb as food. A little of the phosphorus in acid phosphate may be in a combination of two parts of lime and one of phosphorus.

When sulfuric acid is applied to make the phosphorus or rock phosphate soluble, the sulfuric acid is immediately changed to sulfate of lime or gypsum. In this form it is no longer acid.

This change is brought about by the sulfuric acid taking some of the lime away from the phosphorus in the rock phosphate. Stripped of two atoms of lime the phosphorus becomes water soluble plant food. The sulfur having the stronger pull, or affinity for lime, takes lime away from phosphorus.

Lime is, therefore, associated with every atom of sulfur and phosphorus in acid phosphate. In fact, acid phosphate is no more likely to render soils acid or sour than raw rock phosphate, or basic slag, or bone meal, or rock phosphate made available by non-acid methods. That acid phosphate does not render soils acid is generally conceded by soil chemists.

Alkalies are the opposite of acids. One is as dangerous as the other. In certain sections of the country "black alkali" is more dangerous than acidity has ever been known to be.

A farmer who does not realize that

some acids are necessary elements of plant foods as well as some alkalies, is likely to be misled into believing that acids are always to be avoided.

Take sulfur, as an acid-forming substance: Sulfur is a necessary plant food. Some soils are so deficient in sulfur that if it were not applied in acid phosphate the farmer would have to buy and apply it to get the best crop yields.

It has been found that with potatoes that it is an advantage to apply sulfur to the soil where acid phosphate has been used in order to create a certain amount of soil acidity to prevent the development of potato scab. Acid phosphate being neutral could not create the desired acidity.

Citrus growers of Florida are fearful of alkalinity believing that too much lime will cause frenching. They have been more anxious to have a neutral or slightly acid soil than an alkali condition.

In fact, if farmers generally knew the chemistry of plant foods they would not for a moment think of acid phosphate as a material that will render soil acid, or regard it as any other than the most readily available phosphate for plant use that science has yet found.

Rock phosphate is not as readily available as plant food because it has not yet been rendered soluble by the action of acids. Basic slag is not quite so readily available as acid phosphate because it has to undergo certain changes in the soil before it becomes water soluble and therefore ready for the plant to use. Certain processes wherein heat is used to change rock phosphate into a more available form does not produce much water soluble phosphorus but, like basic slag, it may become so under the actions of the soil. In fact, these phosphate materials that are not water soluble at the outset may become soluble rapidly enough in the soil to meet crop requirements, but experiments of this and other countries are in general agreement in showing that no form of phosphorus is as efficient as the acid treated phosphate.

## BETTER QUALITY ANTICIPATED

Polk county's new citrus crop will be of considerably better quality than that of the past season, if weather conditions will continue as favorable

as they have the past few months, says C. C. Commander, manager of the Polk County Citrus Sub-Exchange. Mr. Commander anticipates no increase in the county's grapefruit production next season, but expects a much larger crop of oranges.

## NEW EQUIPMENT AT LEESBURG

New citrus grading machinery is to be installed this summer in the packing house of the Leesburg Citrus Growers' Association, replacing all of the old equipment. Slight additions to the plant, which will cost about \$8,000 in all, are also to be made. When the work is completed the plant will have a capacity of five cars of fruit per day, and will be one of the best equipped for its size in the state.

## INSTALLING MACHINERY

Citrus grading and packing machinery is now being installed in the packing house erected last spring by the Babson Park Citrus Growers' Association. The plant will be ready to operate by Oct. 1. According to Dr. A. H. Stafford, the manager, the association may ship as much as 75,000 boxes of fruit next season.

## "ASK YOUR NEIGHBOR—HE KNOWS"

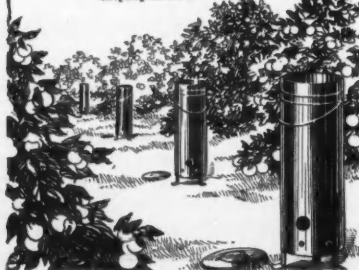
For over 35 years the E. O. Painter Fertilizer Company has furnished Florida growers with fertilizers. The continued patronage of experienced growers gives proof of satisfactory results. **COULD BETTER FERTILIZER BE MADE WE WOULD MAKE IT** Write for New Fall Price Lists Just Issued.

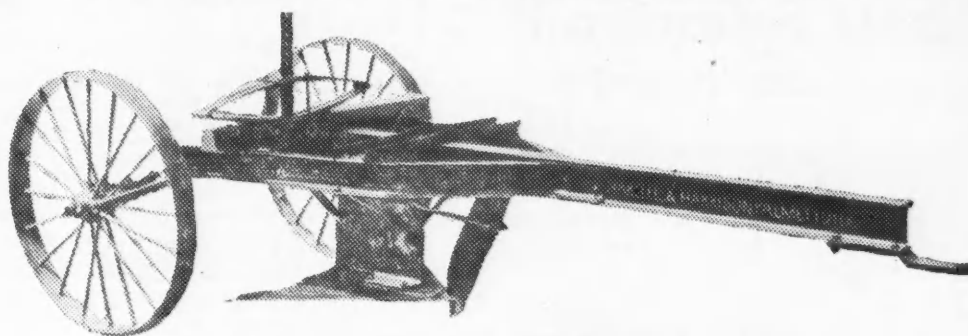
E. O. PAINTER FERTILIZER CO.,  
Jacksonville, Florida

# Play Safe

SKINNER COKE HEATERS have positively proven their effectiveness, in protecting Florida groves from damage by frost. Because of their efficiency, low first cost and economy of operation, they offer the very best means available for insuring citrus trees, fruit and truck crops against frost damage. SKINNER COKE HEATERS send out an intense radiant heat that frost can not penetrate, thereby protecting buds, blossoms and the tenderest growth. Write at once for full particulars.

Skinner Machinery Company  
Gulf Avenue, Dunedin, Florida.  
World's Largest Manufacturers  
of Fruit and Vegetable Packing  
Equipment.





## WEBB CLEARING PLOW

Manufacturers—HARLEE & HARRISON—Distributors  
Palmetto, Fla.

Machinery has scored another victory over manual labor. The Webb Clearing Plow has conquered Saw Palmetto!

By the use of the machine, a tractor and two men, from four to eight acres of Saw Palmetto land can be grubbed and left ready for piling and burning in a day's time.

This plow is no experiment. It has been proven practical and has stood the test under demonstrations of the most adverse circumstances to thousands of farmers who unanimously acclaimed it the machine of the hour.

The cost price is its only expense—there are no parts about it to break or get out of order.

The two knives do the work. Ask your county road engineer.

## HARLEE & HARRISON

Lincoln, Ford & Fordson Dealers  
PALMETTO, BRADENTOWN & SARASOTA, FLORIDA.

# Ocklawaha Pedigreed Citrus Trees

Standard varieties budded to Sour Orange and Rough Lemon root systems, also the leading "Fancy" varieties suitable for home orchard plantings, the entire list comprising 12 varieties on Sour Orange root and 18 varieties on Rough Lemon root.

## Ocklawaha Nurseries

LAKE JEM, FLA.



## Heater Salesmen Hold Convention

Clearwater Beach, Aug. 17.—Citrus and vegetable frost and freeze protection by coke heaters, from the viewpoint that such protection is an insurance on the agricultural and horticultural industries and general prosperity of Florida, was discussed here this week at the two-day convention of the sales department of the Skinner Machinery Company, of Dunedin. Twenty of the salesmen and executive officers of the Skinner organization, and members of the advertising department, were in attendance.

Florida's citrus growers are fast realizing the need for protecting their fruit trees from the danger of cold weather, it was reported at the meeting, and are showing a greater interest than ever before in methods by which they can safeguard their property and livelihood. That the frank admission of the danger of frost and freeze in Florida, even though a general freeze may come only on an average of once every seven years, will eventually be of great benefit to the industry, was the consensus of opinion of the speakers. The old idea that Florida should minimize the danger of cold weather was scouted, because it leads new settlers into the belief that they need no protection, when they some day will have a great need for it. So long as Florida's citrus industry is unprotected from frost or freeze, both of which are possible any winter, the citrus industry, or a year's fruit crop, is in danger of being seriously damaged.

Plans of the Skinner Machinery Company to manufacture a new model coke heater on a quantity basis were explained by B. C. Skinner, president of the company. This new heater will retail for considerably less than any ever before marketed, and will enable a grove owner to insure his property against possible damage by freeze at a cost of about \$10 per acre per year, over a ten-year period, or for less than the present cost for regular insurance which can be secured only on fruit and which does not cover the trees.

"If we can bring the growers of Florida to a realization of the great need there is for the protection of their property, and can get them to place heaters in their groves—ours or any other kind—we will be doing the citrus industry of this state the greatest service that has ever been done," said Mr. Skinner.

The new Skinner coke heater will be manufactured in the Skinner plant at Dunedin, and will have a number

of improvements over old models. The cost will be considerably lower than products turned out in previous years, due to the arrangements that have been made for a larger and more economical production.

Details of an extensive advertising campaign on coke heaters that the Skinner company will inaugurate next month were explained by Thomas W. Hewlett, advertising manager of the company, and Wayne Thomas, of the Thomas Advertising Service. This campaign is designed primarily to bring out the matter of frost and freeze protection in Florida in its true light, and to arouse the growers of the state to the need for protecting their property. Incidentally, it will educate the growers as to how easily and cheaply their fruit and trees can be protected by the new Skinner coke heater.

The Scheu oil heater, with which a large percentage of California citrus groves are protected, will be handled by the Skinner sales force in the southeastern territory in addition to the coke heater, it was announced. This heater is manufactured by the American Can Company.

In charge of the convention was W. M. Lloyd, of Ocala, who was assisted by H. T. Simpson, of Dunedin. These men recently undertook the organization of the Skinner sales force for the handling of the products of the Dunedin factory. Others in attendance were P. D. Moore, Island Grove; B. W. Dennison, Plant City; Walter G. Blair, Clearwater; W. T. Reeves, Leesburg; R. G. Allen, Auburndale; A. V. Owen, Fort Pierce; C. B. Ballard, Dunedin; Thomas W. Hewlett, Clearwater; H. B. Hatch, Dunedin; C. P. Smith, Dunedin; D. A. Whitaker, Dunedin; W. S. West, Tampa; J. H. Reese, Miami; Wayne Thomas, Tampa.

### GUARANTY COMPANY MOVES ITS OFFICES

The Growers' Loan and Guaranty Company, a subsidiary to the Florida Citrus Exchange affording a financial service to cooperative growers, has moved its offices from Bartow to Tampa, and is now located in the Citrus Exchange Building. C. H. Walker, new manager of the Exchange Supply Company, has been president and general manager of the company for the past seven years. S. L. Looney, formerly of Bartow, has moved to Tampa and continues as manager.

**FRED THOMAS**  
National DETECTIVE Agency  
Licensed and Bonded  
Civil and Criminal Investigations  
**TAMPA, FLORIDA**  
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The Largest and Best in the South

### SKINNER SANDPROOF SPRAYER "FOR BETTER SPRAYING"

The exclusive STRINE adjustable plunger makes its pump action more efficient, its life longer. All Working Parts Incased in Oil; Sandproof. Strong, durable, easily handled. Excels in pressure and pumping capacity. Turns in 8 foot radius. Write for catalog today.

**SKINNER MACHINERY CO.**  
Gulf Ave., Dunedin, Fla.  
World's Largest Manufacturers of  
Fruit and Vegetable Packing  
Equipment.



## Prepare Now for the Planting of Your Orange or Grapefruit Grove

While Rutherford B. Hayes was president of the United States, before Bloxham was governor of Florida, Buckeye Nurseries were leaders in the citrus industry of this state—just as they are today.

For forty-three years Gillett-grown trees have been producing the widely-heralded, big-money revenues in the profitable orange and grapefruit groves of Florida. Buckeye has a reputation to maintain. It will maintain it.

Buckeye's estimated production for the season of 1923-24 is nearly 800,000 trees. More than half of these have already been reserved by wise and experienced growers. It is now indicated that next year's demand for dependable citrus trees will again be in excess of the supply.

Consult Buckeye Nurseries now as to the varieties and stocks you will want to plant.

### Buckeye Nurseries, Inc.

820 Citrus Exchange Bldg.,  
Tampa, Florida.

Largest Exclusively Citrus Nurseries in the World.

## Florida East Coast Railway Co.

Flagler System

Industrial Department

Associated Land Companies' Officers

Model Land Company-----J. E. Ingraham, President  
W. R. Kenan, Jr., Vice-President  
Chuluota Company -----Sidney Harrison, Sec'y.-Treas.  
C. S. Brumley, Asst. Sec'y.-Treas.  
Perrine Grant Land Co.----J. D. Ingraham, Sales Agent

In the Lake Worth Drainage District, in Palm Beach County the Model Land Company has a large acreage. A large part of this land is well adapted to the successful growing of oranges, grapefruit, pineapples, and most of the commercial sub-tropical fruits grown in Florida. At present there is a big acreage being prepared for these crops.

Chuluota Company has exceptionally fine residential property, as well as agricultural and grove land for sale, in a beautiful, high, pine, rolling, fresh-water lake region of Seminole County. Climate conditions are fine in this locality the year round.

All the land companies will sell in large or small tracts cash or terms. Their lands are situated in all the East Coast counties, principally in the following: Monroe, Dade, Broward, Palm Beach, St. Lucie, Osceola, Seminole, Flagler and St. Johns.

For definite information and particulars, write the Main Office or Local Agents.

### Local Agents

J. A. Rowand -----St. Augustine, Fla.  
C. D. Brumley -----Chuluota, Fla.  
D. E. Austin -----Ft. Pierce, Fla.  
J. B. McDonald Co. -----West Palm Beach, Fla.  
M. C. Frost -----Dania, Fla.  
Pepper & Potter -----Miami, Fla.  
J. B. Reilly -----Miami, Fla.  
P. L. Wilson -----Key West, Fla.  
W. H. Phillips -----Kenansville, Fla.  
A. R. Livingstone (Cape Sable Lands)-----Homestead, Fla.

Main Offices: City Building, St. Augustine, Fla.

Jacksonville Office: 239 West Forsythe Street.

## Do Not Delay Any Longer in Placing Your Order for Citrus Stock for Fall and Winter Planting



For several years we have been unable to supply the great demands for our citrus stock.

The demand for our stock is increasing daily, and it is our desire to fill all orders complete.

WE URGE GROWERS to let us have their orders as early as possible, that they may be assured of their complete requirements for their Fall and Winter plantings. The indications are from our bookings to date that we will not be able to supply the increasing demands for our Citrus Stock again this year.

## Wartmann Nursery Company

Ocala, Florida

Write for price list and information on the famous "WANURCO" Tangerine.

### Jacksonville's Leading Hotel



Strictly Fire Proof. In the center  
of everything.

Rates:

With private bath \$2.50 up. Without bath \$2 up

**HOTEL SEMINOLE**

Chas. B. Griner, Manager  
Jacksonville, Fla.

Thirty-six

## A FLORIDIAN'S IMPRESSIONS OF AUSTRALIAN CITRUS INDUSTRY

Continued from page 17

now called Valencia Late, is perhaps mostly in evidence in their late sorts and very popular for both home markets and exporting to England.

In lemons, the Lisbon leads, with Eureka and Villa Franca also in demand. In Queensland, at Montville and vicinity, we found the orange groves were longer lived and although the industry does not date back over 25 or 30 years they will possibly be as long-lived as our groves here in Florida. These groves are at altitudes of 1200 to 1500 feet above the ocean and only ten to fifteen miles inland in a very pretty environment but without good roads, and it is a problem how to get the fruit down to the railway line which is almost at sea level, and some miles away. Here they use sweet orange stocks somewhat, although they are subject to foot-rot, but make better fruit than on rough lemon, and the sour orange will not grow at all. Lemons are grown on rough lemon, which in many cases is badly affected with scab. The use of the "Scarlet" mandarin as a root-stock is here quite general and all mandarins are grown on it and are in large demand as the mandarins generally are good and rank higher in quality than their sweet oranges.

There are very few grapefruit grown in Queensland although personally I think they could raise some fair fruit there on mandarin root-stock and with proper culture.

These growers have our sympathy as they are now afflicted with a comparatively new pest, a beetle about an inch in length which while young sucks the juice from the stems of young fruit and causes it to drop when the size of marbles. Some large groves in excellent condition have not had any fruit on for two or three years! So far they have not been able to destroy this beetle and are very much worried over the situation. As they also have fruit flies and hosts of other pests it is a very discouraging situation indeed. We were informed by the Queensland Fruit Expert, Mr. Benson, that the citrus canker had been treated with fire wherever found in Northern Queensland and so far did not think it was known at any other point on the continent.

The growers, nurserymen, and officers of the Botanic Gardens and fruit departments were most cordial to us and we were delighted to meet them and to answer their questions so far

## THE CITRUS INDUSTRY

as we were able.

In 1914 we sent, among other trees and plants, the Foster (pink) grapefruit to Brisbane and were very glad to find it fruiting. The color was very light but the single tree we saw was very rank and evidently on rough lemon stock. We gave the introducer our suggestion on budding to other stocks and to use less manure and more mulching. There are in general growth several of our old standard Florida kinds of oranges which we shipped over 32 to 35 years ago, and also lemons, limes and grapefruit still being propagated from these early shipments.

So far the growers have not yet formed any cooperative association, but we both urged them to do so, as like old days in Florida the commission man and the transportation lines get the profit. This condition holds in all lines of fruit growing in all parts of Australia and Tasmania, and until they do get together in a business-like way they are going to find fruit growing a most uncertain venture.

### PRUNING AND BORDEAUX

#### CONTROL FIG LIMB BLIGHT

The fungus that causes fig limb blight attacks the branches and twigs of the tree, and results in a dropping of the leaves, the death of the wood and a loss of the fruit.

The disease is recognized by a pink fungous growth which completely surrounds the infected branches and twigs and which may extend up and down the branch. The leaves quickly wilt and fall and the twigs on the infected parts become decayed and in the later stages they are riddled by a tiny wood borer. The immature fruit on the branches does not drop but remains on the limbs in a shriveled and hardened condition.

The fungus usually starts in the dead tip of a branch, then gradually extends to the healthy part of the branch, causing a sudden wilting of the leaves. For this reason the trees should be kept free of dead wood to prevent the fungus from getting a start, say specialists of the Florida Experiment Station. All infected branches should be cut out, and in doing this care should be taken to cut well back into the healthy wood, as this fungus reaches further back than its outward signs indicate.

A dormant spray of Bordeaux mixture, 4-4-50 formula, is also recommended to destroy the spores that live over the winter.

Until you are in position to change the weather at will, there's no use worrying about it.

## PIPE

Large stock of Government Pipe—used a short while. Good Threads and Couplings. For immediate delivery

500 ft. 8-in.	Blk. Pipe
2000 ft. 6-in.	Blk. Pipe
4500 ft. 5-in.	Blk. Pipe
1500 ft. 4½-in.	Blk. Pipe
3500 ft. 4-in.	Blk. Pipe
8000 ft. 3-in.	Blk. Pipe
10000 ft. 2½-in.	Blk. Pipe
15000 ft. 2-in.	Blk. Pipe
400 ft. 1½-in.	Blk. Pipe
200 ft. 5-in.	Galv. Pipe
300 ft. 4½-in.	Galv. Pipe
300 ft. 4-in.	Galv. Pipe
3000 ft. 3-in.	Galv. Pipe
2500 ft. 2-in.	Galv. Pipe
500 ft. 1½-in.	Galv. Pipe
500 ft. 1-in.	Galv. Pipe

FISHBACK & LEU

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If You Want a  
**SUPERIOR GROVE**  
**Plant**  
**Superior**  
**Nurseries**  
**Trees**

M. J. Daetwyler's

**SUPERIOR NURSERIES**

**Orlando, Fla.**



**The Coffee With  
"The Taste That Satisfies"**



**SENATE**

**Coffee  
is sold by your  
Grocer**

**"NONE BETTER"**

**Tampa Coffee Mills, Manufacturers Tampa, Fla.**

Let us help you solve your Irrigation and

Pumping problems with

# **Worthington Pumping Equipment**

Complete stock of Worthington  
GASOLINE AND KEROSENE ENGINES  
and repair parts.

DEEP WELL, CENTRIFUGAL and BOILER FEED PUMPS, PIPE VALVES  
and FITTINGS

## **Mine & Mill Supply Company**

Worthington Distributors

MULBERRY

(Get in touch with our Engineering Department)

FLORIDA

## DUTIES OF A PACKING HOUSE FOREMAN

Continued from page 11

a point where they may be nailed. All of the combined damage incurred by rough handling of the fruit in other operations will not exceed the damage which may here result.

And right packing methods which injure so much less fruit and result in so much higher returns really result in but little higher operating costs. It is hard to teach old dogs new tricks and some of the old slap-bang packers must be discharged in order to secure the attractive pack which brings the premium.

Assuming that all other operations have been well and carefully handled the fruit is now ready for loading. It would be easy to think that most loading is correctly done as this is an exceedingly simple thing to do properly, however, photographs taken by the railroads indicate that much loading is not done carefully and all of the good work previously done may here be spoiled. The carriers themselves have taken this situation in hand, however, and this trouble is on the decrease, so I will not dwell on this particular problem here. Ice should not be spared and during warm, rainy periods all shipments of oranges, tangerines and frequently even grapefruit should be shipped under refrigeration to destination; or at least initially iced. This latter practice we have found generally satisfactory when the weather is sufficiently cold north of this state but warm or rainy here.

## THE CITRUS INDUSTRY

Mr. L. B. Skinner, president of the State Horticultural Society, made a short talk at the Lakeland convention some eighteen months ago which might well have been printed and tacked on the walls of every packing house in the state. I do not remember what title, if any, he gave his talk, and indeed believe that the talk was made extemporaneously, but it might have been entitled "Getting the Extra Fifty Cents." He did not go into any lengthy argument, but touched on various things which he had found necessary in order to secure this extra fifty cents. And I want to now say that fifty cents is a very small margin of difference between the price which fruit will bring, if indifferently packed, as compared to the price the very same fruit will bring if carefully and attractively packed. Isn't it queer that more thought is not given to this subject? Fifty cents a box means one hundred and eighty dollars a car. If a grower is packing his own fruit this represents almost the cost of production. If the packing house operator be a fruit speculator, fifty cents a box represents a big profit. If the fruit is being handled for the account of the grower, then that grower should demand that his labor, and the miracle of nature in producing such fruit, be not destroyed or lessened in value by anything savoring of carelessness or willful negligence.

All of the operations which I have described take but little more time in a packing plant than this has taken me here to read. However, this time, though short, is vital, and every factor which I have mentioned may be a

very possible reason for injury and decay. Any one of the wrong practices which I have named can and will do injury; therefore, the foreman who is ninety per cent efficient may still be a tremendous liability to his employer. It takes patience and everlasting perseverance to have every condition right, but isn't the reward of rightfully performing a task worth it? Isn't the additional fifty cents or a dollar per box worth it? It is not impossible to operate economically a sanitary packing house where careful handling and packing is the result, and once employees are schooled, or maybe I should say forced, to follow such methods, the employees themselves would not willingly revert to the old slipshod, careless and harmful practices. We have found that the simplest remedy is the entire elimination of piece work.

This takes us back to the point of beginning. "And a foreman's work is never done." But perhaps no worthwhile thing is easily accomplished and certainly nothing is more worth while than handling fruit in a manner which its innate goodness and value deserve. Indeed this is an obligation we owe Mother Nature and one we have long enough abused.

Big cream checks and small feed bills are the secrets of success in dairy farming.

The farmer works hard to make his corn, but he gets only four out of every five bushels made. He feeds the other bushel to corn weevils. Farmers are generous folks, anyway.

## Twenty Years of Experience

and close study of Florida soils and their needs, particularly as regards Citrus Crops, produced

### BETTER QUALITY FERTILIZERS

They are right as to availability, sources and mechanical condition.

Write for further information.

**Trueman Fertilizer Company**

Jacksonville, Fla.

Agricultural Chemicals

Special Mixtures

Insecticide Materials

# LEE Cord Tire



## Florida Citrus Growers

The final cost is the real cost of tires.

It's the service you get from your Tires that determines their economy. LEE CORDS offer genuine dollar-for-dollar value and are YOUR insurance against delay in transporting your fruit to market.

LEE dealers, throughout the State, are at your service. Call on yours and let him show you how to reduce your Tire troubles to a minimum.

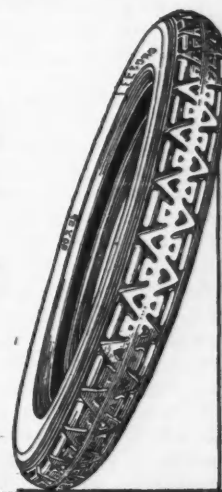
Our Line includes the famous PUNCTURE PROOF.

NOW IS THE TIME TO BUY! THE PROSPECT OF A BUMPER CROP MAKES IT DOUBLY IMPORTANT THAT YOUR TIRES BE THE BEST. BUY "LEE."

### Lee Tire Company of Florida, Inc.

622 W. Forsyth St.,  
JACKSONVILLE.

710 Ashley St.,  
TAMPA.



## Extra Values in Transport's Advance Construction

Transport models offer you greater truck values not only because they are built of the best specialized units, but because they represent in every single detail the highest attainments in motor truck engineering and designing. Transports embody every important advance which seasoned experience has proved practical.

The superior quality of Transport workmanship is reflected in the perfection of some of the most noteworthy features of motor truck construction, such as Automatic Chassis Lubrication—Transport's Improvement of the Drive Shaft Brake—and Specially Designed Radius Rod Equipment. A part of the extra value that goes with the Transport.

**Automatic Chassis Lubrication:** All parts requiring grease are equipped with nipples for easy coupling to the Alemite grease gun, which, with 500 pounds maximum pressure, positively forces the lubricant into the closest-fitting bearing and wearing parts, ejecting old grease, grit and dirt. The well and wick system is used on all spring bolts and radius rod bolts. By capillary attraction, oil is drawn the full length of bolt, and in the case of springs, an even distribution between all leaves is assured. This system saves you time and labor and assures more thorough lubrication.

**Drive Shaft Brake:** Models 35, 55, 60 and 75 are equipped with specially designed Transport Drive

Shaft Service Brake, which is positive in action and applies braking pressure equally on both rear wheels. This brake checks the tendency to skid when turning a corner by proper control of the faster traveling wheel. A spring cushion on brake rod prevents grabbing action of brakes resulting from too sudden application by driver.

**Radius Rod Equipment:** Two strong steel rods, one on each side of frame held in place by means of all-steel brackets, which are securely riveted and bolted to frame and rear axle respectively, hold rear wheels in perfect alignment and make it impossible for rear axle to slip on springs, assuring perfect operation of braking mechanism under all conditions.

## Bruce Motor Truck Co.

State Distributors

Tampa, Florida



## OUR NEWEST MARKETING PROBLEM

Continued from page 16

who is even the most casual student of such things can anticipate any lasting prosperity of this country unless it is founded upon the prosperity of the farmers and growers who are the backbone of all our industry.

Thus we have two problems in connection with transportation charges which are closely allied. One is concerned with a general lowering of transportation charges for the benefit of the country at large. The other has to do with Florida in particular, and we have got to see that in this Florida obtains a square deal, which is something Florida did not have even before our costs of doing business began to go up under war conditions.

There is no doubt, either, that our existing markets may be expected to become more discriminating as the volume of fruit offered them increases. That means our fruit must be prepared for market in a manner which will entirely be acceptable to the purchasers, or we may expect it to be discriminated against. Large improvement has taken place in the grade and pack of Florida citrus fruits within the period of a comparatively few years. We can only look forward to making still further improvements, in order that we may furnish to purchasers fruit which is graded and packed as to comply with their requirements. These requirements, by the way, are not a result of prejudice or fussiness, but are in accordance with the things which tend to make the fruit more easily sold by those who purchase from us. It also may be expected to be increasingly necessary to produce better quality fruit. It would require a very vivid imagination to anticipate any possible overproduction of good quality oranges or grapefruit within a long period of years, regardless of the acreage to come into bearing; but we in Florida previously have marketed a considerable percentage of fruit that could not be termed good, which was taken by the markets in the absence of better fruit, and it is this grade of more or less unsightly and generally undesirable fruit which we can expect to be discriminated against in the future.

The developments of the next few years very probably will pave the way for a compulsory spraying law, such as has been in existence for a number of years in our sister state of California. They doubtless will mean a revision of cultivation and fertilization practices on the part of some grow-

## THE CITRUS INDUSTRY

ers. However, those growers who today owe their leadership to their unvarying production of quality oranges and grapefruit will not be called upon to revise their methods; and they certainly have nothing to fear from the market prospects.

For a time at least it appeared as if the canneries might help very greatly in solving some important grapefruit problems. There is no doubt now that they will be helpful to some extent even if the partial failure to sell last season's pack may be taken to indicate somewhat restricted canning operations next season, and it is apparent that canning is not going to prove a cure-all for some of our grapefruit ills.

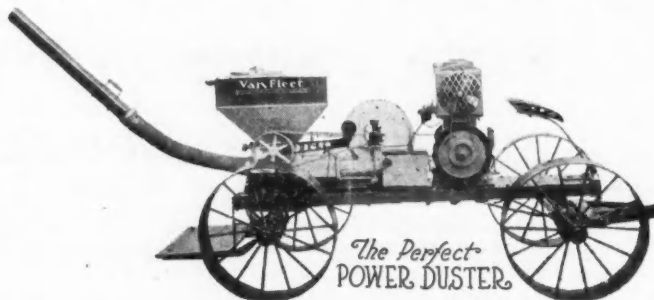
Summarizing the outlook for the next few years, it seems clear that Florida must anticipate raising its average of quality considerably on both oranges and grapefruit. There must be increasing effort toward the production of better fruit. The average standards of grading and packing, likewise, must be raised, and high standards adhered to strictly. We must obtain a readjustment of freight charges which will make wider distribution possible at all times during

the year. The continuing increase in production may be expected so to emphasize the necessity for these things that they shall become accomplishments in short order. Then, too, each grower probably will come to an early realization of the necessity for selecting some large and capably administered organization which is in a position through advertising and aggressive selling methods to effect the widest distribution of the fruit it handles, creating new markets while holding the old, and in many ways stimulating the consumption of both oranges and grapefruit.

We have here in Florida the natural home of citrus fruits. We have a rich and constantly increasing population in the United States and Canada as a customer. If attention is focused upon the desirability of providing our customer with fruit of better quality, and we obtain the sympathetic aid of the transportation interests which serve us, we can make the word "overproduction" a mere bugaboo.

An ounce of corn weevil preventive will save a bushel of corn. Carbon disulphide costs less than corn.

## The "Perfect" Power Duster



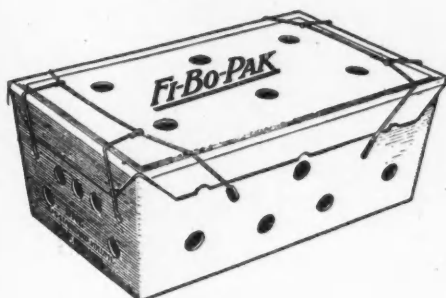
### ANNOUNCING A NEW DUSTER

In announcing the "PERFECT" POWER DUSTER, we feel we have a product that will thoroughly meet the dusting requirements of Florida Growers. Superior features of this machine will immediately recommend it to users of Dusting Machines.

- |                         |   |
|-------------------------|---|
| <b>SIMPLICITY</b>       | One of the principal features of the "PERFECT" is its simplicity  |
| <b>THE FAN</b>          | In the Fan we have made a distinct improvement over any other duster.   |
| <b>THE DUST HOPPER</b>  | Is built low and will contain 100 pounds of dust easily.  |
| <b>THE FEED CONTROL</b> | Is conveniently arranged to the hand of the operator.   |
| <b>DEMONSTRATIONS</b>   | We will gladly give demonstrations to interested parties  |
| <b>THE GUARANTEE</b>    | These machines are made by expert workmen, and are guaranteed to give absolute satisfaction and the highest efficiency. Any parts found defective in material or workmanship will be replaced free of charge. |

## THE VAN FLEET CO.

Manufacturers and Distributors of  
Spraying and Dusting Machines and Accessories  
FLORENCE VILLA FLORIDA



## Fi-Bo-Pak

### Fruit & Vegetable Boxes

### The Last Word

### in Standard Containers

FI-BO-PAK Boxes are scientifically constructed to give maximum strength and protection, in minimum weight and space.

Made of specially processed, compressed fiber board.

Unusually light and strong.

No sharp or uneven surfaces to injure contents.

Scientifically ventilated.

Four sizes: 16-quart used for tomatoes, avocados, mangoes, and tangerines.

28-quart, 32-quart, used for beans, cucumbers, peas, peppers, corn, oranges, etc.

37-quart, used for lettuce, peppers and corn.

Fruit and vegetables packed in FI-BO-PAK Boxes reach the market in best possible condition and command highest prices. Write for proof of these statements.

Made waterproof by paraffining inside and out, which lessens evaporation of contents.

No nails required for sealing.

Wire fastenings included, which are easy to place.

Boxes come nested, ready for use.

## W. A. Merryday Company

State Distributors for FI-BO-PAK

Palatka, Florida.

## Passenger and Freight Service

## to New York

## Summer Excursion Fare \$59.18

Tickets on sale until September 30th. Good returning as late as October 31st. Steamers scheduled to Sail From Jacksonville Every Monday, Thursday and Saturday, at 2 p. m.,

(CALLING AT CHARLESTON, S. C.)

JACKSONVILLE TO CHARLESTON AND RETURN, \$18.00

Fares include meals and stateroom berth. Suites with private baths, some with double bed, others with twin beds, or, staterooms with connecting private lavatory without bath, or, large family rooms accommodating 3 and 4 people, may be obtained at additional cost varying according to location, size, etc.

### St. JOHNS RIVER TRIPS BETWEEN SANFORD AND JACKSONVILLE

Round Trip in Either Direction, Fare \$10.00 Including Meals and Berth  
Freight Accepted and Forwarded on all Steamers with Special Attention to Citrus Fruits and Vegetables in Ventilated Compartments

## CLYDE LINE

G. D. Raymond, Agent.  
L. S. Scoble, Fla. Freight Agt.

H. G. Wenzel, Gen. So. Pass. Agt.  
H. G. White, General Agent.  
Jacksonville, Fla.

## DECAY IN TRANSIT FROM THE GROWERS' STANDPOINT

Continued from page 15

The decay in transit from this house was so marked, and so far out of proportion as compared with our other houses, that we knew something must be wrong which could be remedied. After studying the matter we concluded the trouble must be from rough handling in the field and so informed our manager in that section. Even though the manager vigorously objected to a change in the methods, stating that the cost of picking would be increased, and, also, that, as the custom there had been to pick by the box, we would be unable to get enough day labor to pick the fruit, we insisted that a change be made at least temporarily. The change was made, the men were put to work by the day and the decay stopped and during the balance of the season the decay was no more marked than at our other houses. I give this concrete example of the difference between day work and piece work to show the actual subsequent results.

In fact, piece work should, in my judgment, have no place in the handling of fruit. Piece work results in poorly-made, packed, nailed-up and loaded boxes, for even when labor is employed by the day with no incentive to slight the work, it is difficult to get everything connected with the work done properly and is only accomplished by competent and experienced help under good, conscientious supervision. Packing should be done carefully and with a knowledge of the quality and condition of the fruit packed. Weak fruit should not be packed as tight, nor with as much bulge, as in the case of strong fruit. The weaker the fruit the easier it is to break the tissues and cells by bruising, and when once broken decay will necessarily follow.

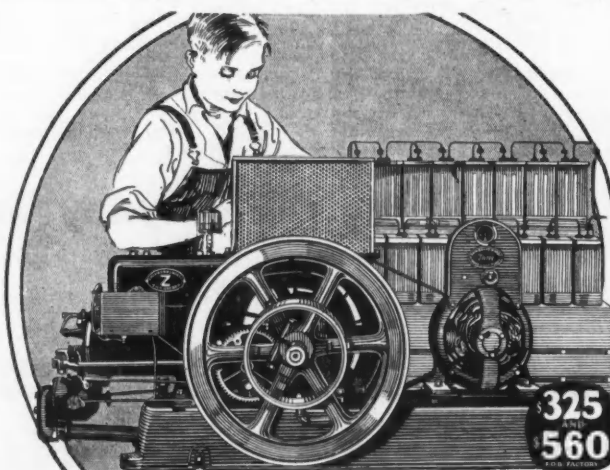
Along this line it might be well to mention that, as most of the growers and shippers know, there is a time which usually occurs in the last part of November or the first of December just as the oranges have apparently finished maturing, when they are particularly susceptible to decay, and when moving fruit at this time, especially if it is damp or foggy weather, all possible care in the handling should be exercised. I do not underestimate what the careful handling of the fruit from the grove to the car has contributed to our small percentage of decay in the five hundred thousand boxes taken from hundreds of groves under many different condi-

## THE CITRUS INDUSTRY

tions in the Indian River section by us this past season.

It is a well known fact that Florida oranges have an unfavorable reputation as compared with California oranges as to their keeping qualities with the trade in the northern markets, thereby causing an enormous financial loss to the Florida growers. With my experiences and observations, I believe the grower and packer are about equally responsible for this condition and that it can be largely overcome. First: If the growers will avail themselves of the knowledge and practices as to proper fertilization, spraying and care now used successfully by the more progressive grow-

ers. Second: If the packer will then intelligently do his part. Florida oranges then will soon take preeminence over all competition in the northern markets, having already established a market value over oranges from any other section by their superior flavor and juice content. While the causes of decay in transit are equally attributable to inefficiency in production and carelessness in handling, yet, in the last analysis, the grower being, in a sense, first to the bat, is largely responsible for the causes of decay, from which accruing losses can be and are minimized by the careful packer.



## DOUBLE SERVICE from this SIMPLER PLANT

Here, at last, is a Home Light Plant that gives *double* the usual service, yet is entirely free from intricate concealed mechanisms. It is not only *more useful*, but also *more simple*.

The Fairbanks-Morse Plant supplies electricity for lights and electrical conveniences and engine power for a line shaft or individual machines at the *same time*. Or you can use the plant for electricity alone or for engine power alone.

### Famous "Z" Engine Used

This plant consists simply of a "Z" Engine and an equally dependable generator and battery. It starts at the touch of a button. Special features insure unusually long life.

A nation-wide dealer organization assures constant maintenance of satisfactory performance from any Fairbanks-Morse Product. Learn all about this simpler, more efficient Home Light Plant. Send for interesting new booklet.

FAIRBANKS, MORSE & CO.  
Atlanta, Ga. Jacksonville, Fla.

Also ask for Home Water Plant Book. See how easily you can have running water in your home.

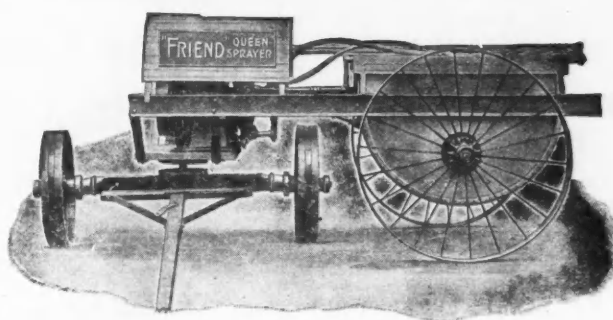


*Double Duty*

# FAIRBANKS-MORSE HOME LIGHT PLANT







## THE "FRIEND" SPRAYER

Undercut Model

Turns short. Large rear wheels. About 30 per cent easier to pull.

DURABLE

ECONOMICAL

DEPENDABLE

Complete stocks of sprayers and repair parts carried in stock at Tampa.

Write for catalog or for appointment with our Salesman

Our best "boosters" are "Friend" owners.

# Citrus Growers Supply Co.

Distributors

303 Krause Bldg.,

Tampa, Florida

## Order "Gulf Brands" for Fall Application

"QUALITY AND SERVICE" is our motto, and we are in better position now than ever before to furnish same.

**PLANT:** This we have more than doubled in size, installing the latest word in machinery—the Sturtevant all-steel, improved machinery, thereby increasing our shipping facilities. Trackage has been greatly increased, giving us more car space for daily shipping.

**MATERIALS:** We are importing these from Germany, Belgium, Chili and Venezuela direct, and the GULF BRANDS are now being made up and binned, so as to go through the proper curing process, ready for fall shipment.

**FIELD SERVICE:** We offer the best, and we want you to take advantage of it. Drop us a line and the GULF MAN will call and consult you.

Quality and Service Did It.

GULF BRANDS. HARDIE SPRAYERS. JOHNSON DUSTERS. INSECTICIDES.

# The Gulf Fertilizer Company

Tampa, Florida

## LOCATING A CITRUS GROVE

Continued from page 5

and southeast sides are desirable.

6. Nearness to Packing House. The day of the small individual packing house with its crude machinery and large amount of hard labor is rapidly going where the spinning wheel, the loom and cobbler's shop have already gone. Like them it is being superseded by the factory method of performance where labor-saving devices and improved methods of operations are used, and more uniform and attractive output secured. To be conveniently near a modern community-operated packing house is an important factor for success.

7. Quality of Roads. A large expenditure of time and energy is required to transport fruit, or to travel for other purposes over the sandy roads so common in the citrus regions of the state. Good hard surfaced roads have been and are being built. To be on or near one of these adds much to the desirability of the location.

8. Distance From Insect and Disease Infested Groves. We have yet no compulsory spraying law and probably will not have in the near future. While spraying is growing in popularity and effectiveness, yet there are pest-ridden groves that are sources of reinfestation after thorough spraying has been done. One should not knowingly select a location beside such a grove.

9. Ease of Clearing. The best lands are usually the most difficult to clear because their fertility will produce abundant vigorous vegetation, but there is often marked difference in size and variety of vegetation to be removed, so this demands attention in considering the location.

10. Price per Acre. Land suitable for citrus located near town, convenient to a good packing house, on a good road and scoring high on other points will command a good price, but prices vary considerably where all points considered will total about the same, so careful comparison of prices on different areas should be made.

11. Character of the Community. How much importance should be given to this depends on whether the grower expects to live on the property or not. Most prospective growers do, in which case careful attention should be given to the school, church, social and other activities; character of the people who will be neighbors, their industry, culture, cooperative spirit and congeniality.

How many miles of macadam or

## THE CITRUS INDUSTRY

concrete road could be built with that million dollars worth of corn Florida farmers feed to the corn weevil every year?

### TREAT CITRUS FOOT ROT BEFORE IT GETS SERIOUS

Specialist Advises That Earth and Diseased Areas Be Removed from Roots, Then Affected Region Be Painted With Antiseptic

Large bearing citrus trees are often killed in a single season by the disease known as "foot rot." This trouble, most prevalent on trees planted on low land, is especially dangerous to nursery trees. If control measures are taken in time, little loss will be experienced.

"The disease begins in the bark of the crown or main roots, usually at or just below the surface of the soil," says O. F. Burger, plant pathologist of the Florida Experiment Station. "It is first noticed by a small area of decayed bark from which there is a slight oozing of gum in small drops. The decayed bark has a water-soaked appearance and a watery gum is usually found beneath."

The treatment recommended by Dr. Burger consists in removing the soil from about the crown roots, exposing all infected areas. Then all active diseased areas should be cut out clean to the healthy tissue, and some antiseptic applied. For this purpose either of the following are good: crude carbolic acid, 1 part, and water, 1 part, in which a little soap has been dissolved; or avenarius carbolineum, dilute or full strength; or bichloride of mercury, 1 to 1000 solution.

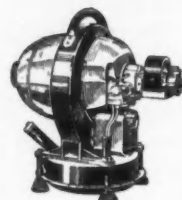
In removing the earth from the roots, some experienced growers use a water hose connected with the spray tank, washing the earth away from the trunk. This prevents any mechanical injury to the roots. Water is stored in the spray tank, and the pressure run up to about 200 pounds.

After the diseased areas have been treated the trunk and the exposed roots should be painted with a wash made of equal parts of air-slaked lime and powdered sulphur, mixed with sufficient water to make a thin paste that can be applied easily with a brush. The entire trunk should be painted for three or four feet above the ground. This prevents further spread of the disease, if the old infected spots are cleaned thoroughly and the diseased parts cut away before treating.

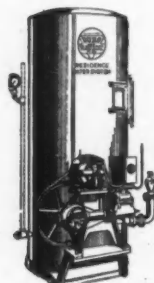
From all Florida's cotton-growing counties come reports that the Florida method of boll weevil control is making good.

## Home Light Plant

**\$245.00**  
Complete



Have your own electric lights. Write us for literature or demonstration



Automatic water systems eliminating overhead tanks. Running water to all parts of your house and out-buildings.

**We make complete installations of Water Systems, Electric Light plants and Irrigation Systems.**

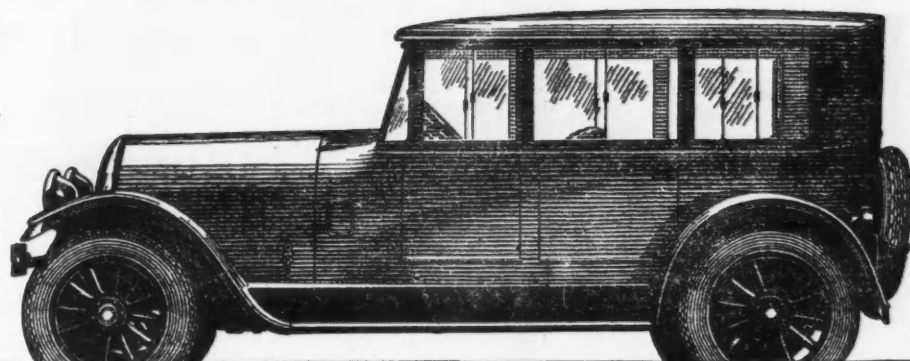
We carry a complete stock of 1½ to 20 horse power Engines, and can make immediate delivery and installation. Water systems in stock for immediate deliveries on all sizes.

Southern Water Supply Co.,

L. A. GABLE, Mgr.

807 Tampa St., Tampa

Distributors of  
Cushman Engines  
Cushman Light Plants  
Duro Water Systems  
Deming Pumping Systems  
Home Light Plants



# The New FRANKLIN DEMI-SEDAN \$2250

F-O-B SYRACUSE

Creating this new and exclusive four-door body design to go with Franklin road ability has given another impulse to Franklin popularity. The Demi-Sedan provides for whatever degree of enclosure you desire, and it is also out of the ordinary in riding comfort and driving ease. Its permanent top, plate-glass windows and leather upholstery are as substantial and enduring as they are fine-looking. Yet note the price—little above an open car.

Owen-Franklin Motor Co., Tampa, Fla.

Franklin-Miami Co., Miami, Fla.

Franklin Motor Car Co., Orlando, Fla.



## ROOT STOCKS IN RELATION TO BETTER FRUIT

Continued from page 7

mandarin, Homosassa orange and grapefruit and located on high, well-drained land, are the best trees in this ten-acre grove. The Cleopatra turned out to be the best stock and is the finest I know. They are very resistant stock to cold and drought. Cleopatra growing under the same conditions as rough lemon and sour orange is better in these days of drought. They bear more fruit, the quality is the finest in the world, absolutely the best. They hold fruit to the end of the season." These old trees mentioned by Mr. Reasoner are near Oneco and show distinct characteristics in regard to tree growth and quality of fruit, both of which are superior. Cleopatra stock is being tested out on the high pine lands and as a preliminary report would say they are looking very promising. Cuts are shown herewith of inarched trees and also of Cleopatra seedlings grown in Polk county high pine land. This seedling is eighteen months from the seed, transplanted once, its height being four feet, ten inches, length of tap root two feet six inches, and caliper over five-eighths inch. Further this block of Cleopatra seedlings are absolutely free from scab although growing adjoining a block of rough lemon seedlings which are quite badly infested with scab. This Cleopatra mandarin stock has many good points in its favor, so many in fact that we are looking for it to prove by actual results that it will be the logical stock to take the place now held by rough lemon in the light soil of the ridge section and to be the means of our securing fruit quality, which to date, under prevailing conditions, has, to say the least, been disappointing.

Along this line I wish to call attention to the root stock and progeny bud selection tests, now under way and being planned at our Branch Experiment Station at Lake Alfred, under direct charge of Dr. Newell. Exhaustive tests such as they will in time be able to make, are of vital importance to citrus growers and should receive the active individual support of every grower.

The improvement in quality of our citrus fruit is undoubtedly the goal toward which growers must work in order to secure remunerative returns from their groves. The growers attaining this end will eventually be in position to secure a premium over the market regardless of the total production.

## THE CITRUS INDUSTRY

### AMERICAN GROWERS' LEAGUE ORGANIZED AT HOMESTEAD

A charter has just been issued to the American Growers' League of Homestead, Florida.

The corporation has no capital stock, not being organized for profit but for the purpose of improving the present methods of distribution and sales of fruit and vegetables and to enlarge the sphere of such distribution, to reduce the cost of transportation of agricultural products, to secure loans for its members from the funds provided for such purposes by the Federal Government, to purchase for distribution at cost among its members, fertilizers, farm implements and such other equipment and materials as may be requisite for the cultivation of fruits and vegetables and to effect such limitation to the competition in home markets on foreign agricultural products with those of the United States during the periods beginning November 1st and ending April 30th, as will insure to farmers and growers a full and just return for their labors.

The charter provides for a President, Vice-President, a second Vice-President, also for a Secretary and Treasurer and for a board of twelve directors. The provisional board of directors is composed of W. A. Green, E. P. Roberts, Byrd Fitzpatrick, T. D. Piche, Thomas Brewer, O. B. Parker, Dan Roberts, E. A. Carter, George P. Wright, R. R. Biggers, E. A. Froschner and Charles T. Fuchs, Sr., all of Homestead.

### BOUGHT AND CLEARED CITRUS GROVE LAND

Last November Mr. and Mrs. W. M. Armstead moved to Fort Meade from Arcadia. They liked it so well that they decided to make this community their future home. They at once began looking around with the view of buying citrus land and found twenty acres near Lake Hendry that suited them. They purchased the land and since then Mr. Armstead has had ten acres of the tract cleared and plowed and intends setting it out to Pineapple or Parson Brown orange trees this winter. Mr. Armstead is a young man and has great faith in the future development of the Fort Meade section in an agricultural way and in the development and advancement of the citrus industry. He is devoting his spare time to his grove interests while he draws down a salary as a successful traveling salesman out of Jacksonville. His wife is the efficient operator at the local Western Union Telegraph office.

Original Introducers

## Adapted Carmen

and other

## Adapted Bunch Grapes

into Florida

We also introduced

Nursery Grown

Orchard Tree Blueberries

Adapted Tree Black-  
berries

Established 10 Years

Acreage vineyards of our Adapted Grapes have been yielding highly profitable crops in Florida year after year for upwards of a decade. They have proven to be long-lived varieties of bunch grapes. The delicious quality of the fruit has been convincing to the general public since before the great World War.

It does not require many years before you reap satisfactory returns in the adapted bunch grape growing industry in Florida. In eighteen months after planting, with reasonable care, you will get a paying crop of fruit, and in thirty months you will be surprised at the very liberal returns.

It would be wise to get your orders in early for next season.

Special prices and terms on early orders.

## Southern Adapted Nurseries

Main Nurseries, Bartow, Florida.

Florida Sales Offices, Tampa,

Florida

# Protect Your Grove

## Spray for White Fly and Scale

It is important that as few as possible of these insects be left in the grove during the winter season as they not only drain heavily on the vitality of the trees, but will be on hand to multiply rapidly next spring. Every infested grove should be given a fall clean-up spray with our

### IDEAL OIL EMULSION PASTE

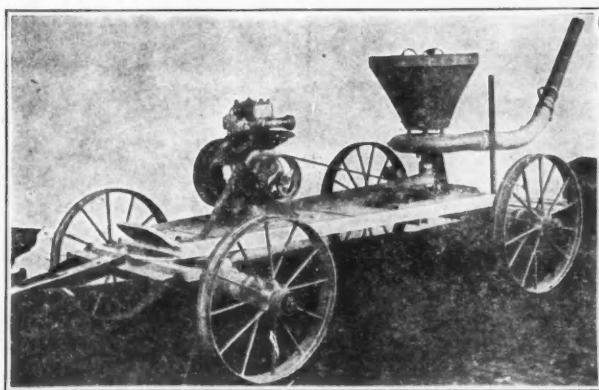
(Mixes with any water or Lime Sulphur Solution.)



## Efficiency Economy Satisfaction

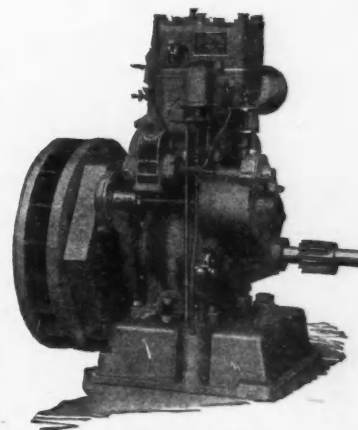
You get all of these with a Bean Outfit

To be effective, spraying must be done at the right time and in the proper manner. Use the right type of sprayer. BEAN POWER SPRAYERS are giving universal satisfaction. Write for descriptive Catalogue and compare Bean Sprayer features with those of other makes.



**The Bean Duster**

The last word in SIMPLICITY, COMPACTNESS AND DURABILITY. The Duster that will handle both Pure Ground Sulphur and Sulphur and Lime Dust Mixtures satisfactorily.



**The Bean Engine**

Made in 4- and 6- h. p. sizes. Representing the latest improvements in single cylinder construction. Approved by the Society of Automotive Engineers.

## FLORIDA AGRICULTURAL SUPPLY COMPANY

JACKSONVILLE, FLA.

LAKE WALES, FLA.

(Our products can be obtained at any Branch House of Wilson & Toomer Fertilizer Company)

## Forty-eight

### HEAVY DEMAND FOR

#### FLORIDA BANANAS

The demand for Florida-grown bananas is greater this season than ever before, says W. E. Bolles, of Oldsmar, secretary of the Florida Banana Growers' Association. He has received numerous letters and personal calls recently from big fruit commission houses in northern and southern states asking for shipments. This demand is partly the result of a very good article on Florida bananas which appeared recently in *The Packer*, the leading fruit and vegetable trade journal of the United States. The *Packer* praised the quality and flavor of Florida bananas, especially the Hart or Ladyfinger and the Cavendish varieties, saying they are superior to the imported article. Most of the Florida banana growers have their crops sold before they mature, consequently only a few are able to make carload shipments in response to the increasing demand which cannot be supplied in full. A number of new plantings are being made now in various parts of Central and South Florida, and some in North Florida.

It is not generally known that bananas have been grown for years in southern Georgia, particularly around Valdosta, where the plants are frozen down every winter, but the roots send up new shoots which bear fruit regularly the following fall. Quite a number may be seen growing on the campus of the Georgia State College for Women at Valdosta.

The corn fed to the weevils in one year in Florida would run all the state's institutions of higher learning in pretty good shape.

#### CLASSIFIED ADVERTISEMENTS

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

#### REAL ESTATE

**ONLY \$1,000 DOWN** gets LAKESIDE 200-tree bearing orange grove, 5-room house, 22 acres fine fruit trucking soil, borders two beautiful lakes; fishing, boating, bathing, good neighbors, 2 miles to town, high school; only \$3,000 to close estate. Stuart R. Greiner, Eustis, Fla. 1t

**FOR SALE:** Splendid solidly bearing orange grove in one of the best orange producing sections of the state. Soil of the best to be found anywhere. Quality citrus fruits produced up to the highest standard of excellence. Reason for selling, moving away. It is an opportunity worth while to some one. Address Box 114, Citra, Fla. 2t-pd

**10 ACRE ORANGE,** grapefruit grove, 6 years old, Lakeland Highlands, next to

## THE CITRUS INDUSTRY

Haskell Townsite on Dixie Highway, near Haskell station and packing house Owner, H. J. Strimble, Penns Grove, N. J.

**THE GROVE YOU WANT**—You'll find it fully described and correctly priced in our new booklet "Groves and Farms" just issued. Send for copy. Dotson & Company 816½ Franklin St., Tampa, Florida.

**WILL EXCHANGE** West Texas cattle ranch for unimproved or improved land in Florida. What have you? Give price and full particulars. T. E. Bartlett, 3410 McKinley Ave., El Paso, Texas.

#### CALIFORNIA

**\$5,000 CASH—\$5,000**

Balance 1-2 NET profits from crops. 20 Acres full bearing Navela. \$10,000 eight room house.

Chance to acquire beautiful home and profitable business with small outlay.

Buyer must know citrus culture and reside on property.

Other business interests cause this exceptional opportunity.

**CLARENCE GELDERT**, Owner. 1765-G North Bronson Avenue, Los Angeles, California.

**EARLY BEARING** Papershell Pecan trees, budded or grafted and guaranteed. Great shortage this year. Write for catalog today. Bass Pecan Company, Lumberton, Miss.

Want to hear from owner having farm for sale; give particulars and lowest price. John J. Black Chippewa Falls, Wisconsin.

#### NURSERY STOCK

##### POLK LAKE NURSERIES

Offer to the grower young trees of standard variety, backed by 30 years of nursery experience and a guarantee which only honest dealing can justify. For full information address A. H. Sloan, Box 413, Bartow, Fla.

**BANANA PLANTS** for sale. Improved Cavendish, Hart, Orinoco, Ladyfinger. Information free. W. E. Bolles, Oldsmar, Fla. tf

**PAPER SHELL PECAN GROVE.** Most trees 12 and 13 years old, which is full bearing age. Good condition. Forty acres. Located near Monticello, Fla., Price \$500.00 per acre. Simpson Orchard Co., Vincennes, Ind.

**FOR SALE—700 Valencia, Pineapple Marsh 4-year buds.** Probably best in state. 1000 nursery stock. Sealed bids, Dec. 20. For information apply U. S. Dept. Agriculture, Box 1058, Orlando, Fla.

**FOR SALE—Peas and velvet beans** of all kinds. New bags, even weights. All peas cleaned. H. M. Franklin, Tennesse, Ga. Mar.-4t

#### MISCELLANEOUS

**FOR SALE—One second hand Wallis tractor** in A-1 condition. Will sell cheap for cash. King Lumber and Manufacturing Company, Nocatee.

**WHITE WYANDOTT** Cockrels, regal strain—the best in the country, direct from Martin pens. Utility and show birds \$5.00 each; also eggs for hatching \$5.00 per 15. W. A. King, Gen. Del., St. Petersburg, Florida.

**FOR SALE—Dairy and stable manure,** car lots. Link & Bagley, Box 464, Tampa, Florida.

**SOUTHDOWN SHEEP,** White Rocks, Toulouse Geese, Guineas, Angora and Milk Goats, Circular free. Woodburn, Clifton, Va.

**FLORIDA INVITES YOU**—Write today for our new grove list in Supplement No. 4 to our regular booklet. It's full of bargain offerings and more than likely contains full description of the very grove you'd like to own. Dotson & Company, 816½ Franklin St., Tampa, Florida.



## One Of The Keys

### To Successful Citrus

### Growing Is Proper

### Fertilization

While culture, pruning and spraying play an important part, these operations are of little value unless the trees are well supplied with plant food.

Make sure that your trees are supplied with the kind of fertilizers that produce good growth and full development of fruit.

V-C Citrus Fertilizers are especially formulated for the exacting needs of citrus trees. Our facilities for securing and manufacturing high grade materials, combined with years of experience in supplying the most successful growers, enable us to furnish goods of the highest quality which will give the best results.

Our Agricultural Service Bureau is at the command of our customers and will be glad to answer any questions regarding the use of fertilizers or the culture of citrus crops. This service is free. Write

Agricultural Service Bureau,

**Virginia-Carolina  
Chemical Company**

Jacksonville, Fla., Division,

C. T. Melvin, Manager,

Jacksonville, Fla.

